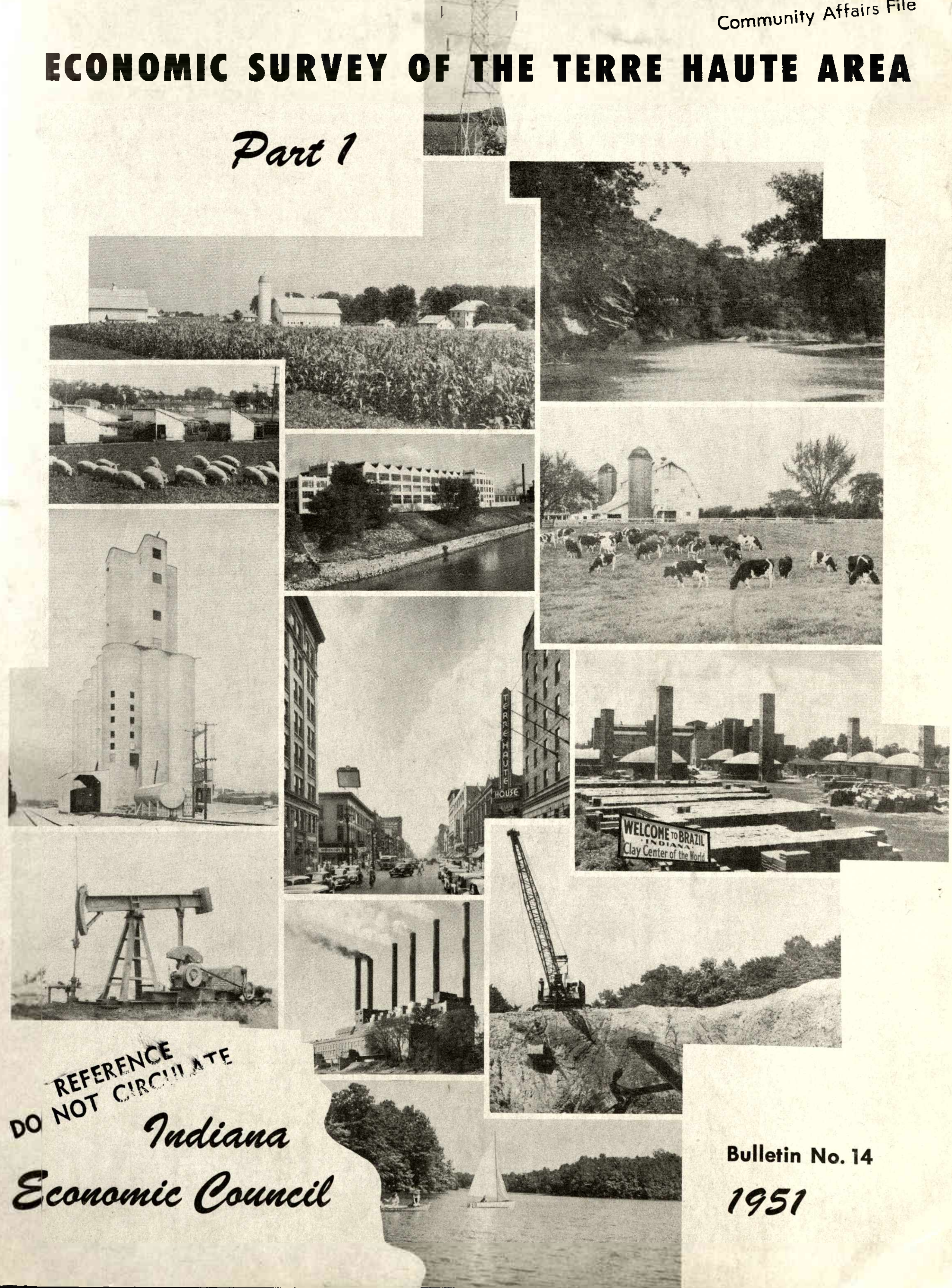
Economic Conditions (TH) DUP

Community Affairs File

ECONOMIC SUBVEY OF THE TERRE HAUTE AREA

Part 1



REFERENCE
DO NOT CIRCULATE

Indiana
Economic Council

Bulletin No. 14

1951

STATE OF INDIANA

Economic Survey of the Terre Haute Area

Part I

Parts II and III, to follow, will embrace chapters dealing with resources, industry, trade, government, transportation and utilities, and recreation.

VIGO COUNTY PUBLIC LIBRARY
TERRE HAUTE, INDIANA

General Direction of the Survey

by A. Philip Sundal

INDIANA ECONOMIC COUNCIL
140 NORTH SENATE AVENUE · INDIANAPOLIS, INDIANA

Bulletin No. 14 • July 1951

INDIANA ECONOMIC COUNCIL

OFFICERS AND MEMBERS

George Caleb Wright, Chairman
Architect, Indianapolis

Kenneth B. Elliott
Vice-Chairman
Vice-President
The Studebaker Corporation
South Bend, Indiana

Mrs. George Jaqua
Secretary
Winchester, Indiana

Henry F. Schricker
Governor of Indiana

Leroy E. Burney, M.D.
Commissioner
State Board of Health
Indianapolis, Indiana

Joseph E. Finerty
Gary, Indiana

James A. Gloin
Treasurer
L. S. Ayres & Company
Indianapolis, Indiana

Samuel C. Hadden
Chairman
State Highway Commission
Indianapolis, Indiana

Thomas R. Hutson
State Labor Commissioner
Indianapolis, Indiana

George S. Diener
State Representative
Indianapolis, Indiana

Kenneth M. Kunkel
Director
Department of Conservation
Nashville, Indiana

G. E. Lommel
Professor
Topographical Engineering
Purdue University
Lafayette, Indiana

Walter H. Maehling
State Representative
Terre Haute, Indiana

John C. Mellett
Public Service Company of Indiana
Indianapolis, Indiana

Stephen C. Noland
Indianapolis, Indiana

R. Earl Peters
State Director
Federal Housing Administration
Fort Wayne, Indiana

H. J. Reed
Dean and Director
Agriculture Experiment Station
Purdue University
Lafayette, Indiana

George W. Starr
Director
Bureau of Business Research
Indiana University
Bloomington, Indiana

Leo J. Stemle
State Senator
Jasper, Indiana

Anson S. Thomas
Director
Tax and Legislative Department
Indiana Farm Bureau, Inc.
Indianapolis, Indiana

John W. Van Ness
State Senator
Valparaiso, Indiana

STAFF

Blaine W. Osterling, Director

A. Philip Sundal, Research Supervisor
Clarence V. Windsor, Planning Engineer
Warren C. Risher, Planning Technician
Ray W. Seidle, Administrative Assistant

Roberta Elliott, Secretary
Kay Arnold, Librarian
Jeannette Brown, Stenographer
Alberta Purdue, Stenographer

GENERAL PREFACE TO AREA ECONOMIC SURVEYS

Initiation of the Studies

The law establishing the Economic Council provides that it shall study and investigate the resources of the state and "the problems of agriculture, industry, population, and allied matters." The Council is also required "to formulate plans and make recommendations which will be helpful to agriculture, labor, mining, manufacturing, industry, the transportation of persons and goods, the conservation of forests, soil, stream flow, parks, parkways, game preserves and other resources and activities in the state, and for adequate provision for the future population of the state."

Since its creation in 1943, the Council has published the results of several studies of a general, state-wide character. However, there was developing for some time the idea that economic surveys of an "area" or "regional" nature might be particularly useful. Our economic enterprise tends toward specialization because of special advantages and disadvantages of geographical location and because of more or less accidental historical events. Closely related to the industrial and business characteristics are always certain characteristics of the community life as a whole.

It appears to be true that the locality itself is the setting and scope for most of the thinking and private and public planning that takes place. For some purposes, however, the horizons must be broadened—areas are not self-contained. The leaders, at least, are of necessity concerned about influences from outside the locality as they affect the local situation. In thinking about "area" or "regional" studies, the Council members were merely considering some geographical area having more or less in common certain key elements—particularly economic and social elements as well as geography. Several groupings have been made of Indiana's 92 counties, and it was anticipated that some such grouping could be used for "area" economic surveys.

It was considered that the purpose of these economic surveys would be, primarily, to provide background information that interested citizens, civic groups and official bodies could use in their industrial and other development and planning. The studies would develop what might be called a balance sheet of the assets and liabilities of the areas, and provide business leaders, farmers, government officials and others unbiased and factual background data which might serve as an aid in private spending and investment plans and in public capital improvements. It was believed that certainly there are few, if any, local citizens who have the comprehensive over-view of their area that studies like this should provide—even though some local people have a great deal more knowledge about several important matters than the nonresident researcher could hope to obtain.

There are other levels on which projects such as this are important, namely the state and the federal levels. Practically all states, including Indiana (Department of Commerce and Public Relations), have an official agency dealing with industrial promotion and engaged in advertising the state's assets. To some extent this is an effort to expand industry "within" (or encourage expansion of already-existing industry), but it is generally also aimed toward attracting branch plants of firms located in the large metropolises, or existing industries from other areas. From the viewpoint of efficient operation of the economy (proper allocation of resources), such efforts are desirable. Of course, those who make decisions to create new industries or to expand or move their existing operations should ideally have perfect information upon which to base such actions.

The federal government is having to develop more adequate economic information about all parts of the nation to guide its actions in a variety of programs. Much of the industrial expansion during World War II was financed directly or indirectly by the federal government, and the location of these plants has had a great effect on the local level and the state and national levels. It is certain that the federal government will exercise some influence on the location and expansion of industry in the foreseeable future, partly because of the development of the atomic bomb and the entire atomic energy program, and partly because of the industrial expansion considered necessary to strengthen our military might. The federal government may have to undertake directly more research than it is already doing of the sort exemplified herein, or it may be that more adequate information can be developed at the state and local levels.

A series of events contributed to and reinforced the Council's interest in "area" studies. For one thing, the Reports and Analysis Section of the Indiana Employment Security Division published a brief report ("Special Inquiry into Labor Market Conditions in the Terre Haute Area," 1947) on employment conditions in a group of counties they called the "Terre Haute Area." In connection with the transmittal of a copy to the U. S.

Department of Labor, those responsible for the study expressed the feeling that their rather restricted study did not give them the scope of investigation required to produce a rounded picture of the area. This correspondence was brought to the attention of the Economic Council—the logical state agency to receive the benefit of thinking along these lines.

The general summary of this earlier study reveals some rather baffling facts which explain the interest of the research workers in their subject. Selected statements are here reproduced, as follows:

> "The Terre Haute Area has been a labor surplus area since 1919, with the exception of the year from September 1942, to September 1943. Serious employment declines have occurred in coal mining, agriculture and manufacturing since 1919. Technological changes in mining methods, depletion of soil in agricultural areas, and loss of manufacturing plants were among the responsible factors. The area did not experience a boom prior to the post-1929 depression, and there was a marked failure to achieve industrial recovery during the Thirties."

* * *

> "Resources within the area are excellent for the establishment of new manufacturing establishments. In addition to the plentiful labor supply the area is a railroad and trucking center, and is well supplied with natural resources, including bituminous coal, clay and water. One of the largest electrical power generating plants in the state is located in the Terre Haute Area."

During this period, members of the staff of the Economic Council (in particular Mr. Paul Middleton, former Director) had been called upon for a number of talks before business and planning groups in Terre Haute and several of the neighboring smaller cities. They learned that there was an intense interest in securing help from agencies such as the Economic Council in further examination of economic conditions locally. This not only reinforced earlier thinking as to the feasibility of area studies, but made it practically inevitable that the Terre Haute Area would receive first consideration when a decision had to be made about where to begin.

As a result of this trend of thinking and events, planning for a series of economic surveys of the various areas of the state was begun in earnest in the early months of 1949. Numerous consultations were held with leaders in the Terre Haute Area and with administrative personnel of the two state universities, to get the benefit of their thinking and to obtain in a more formal manner their promises of support and technical assistance.

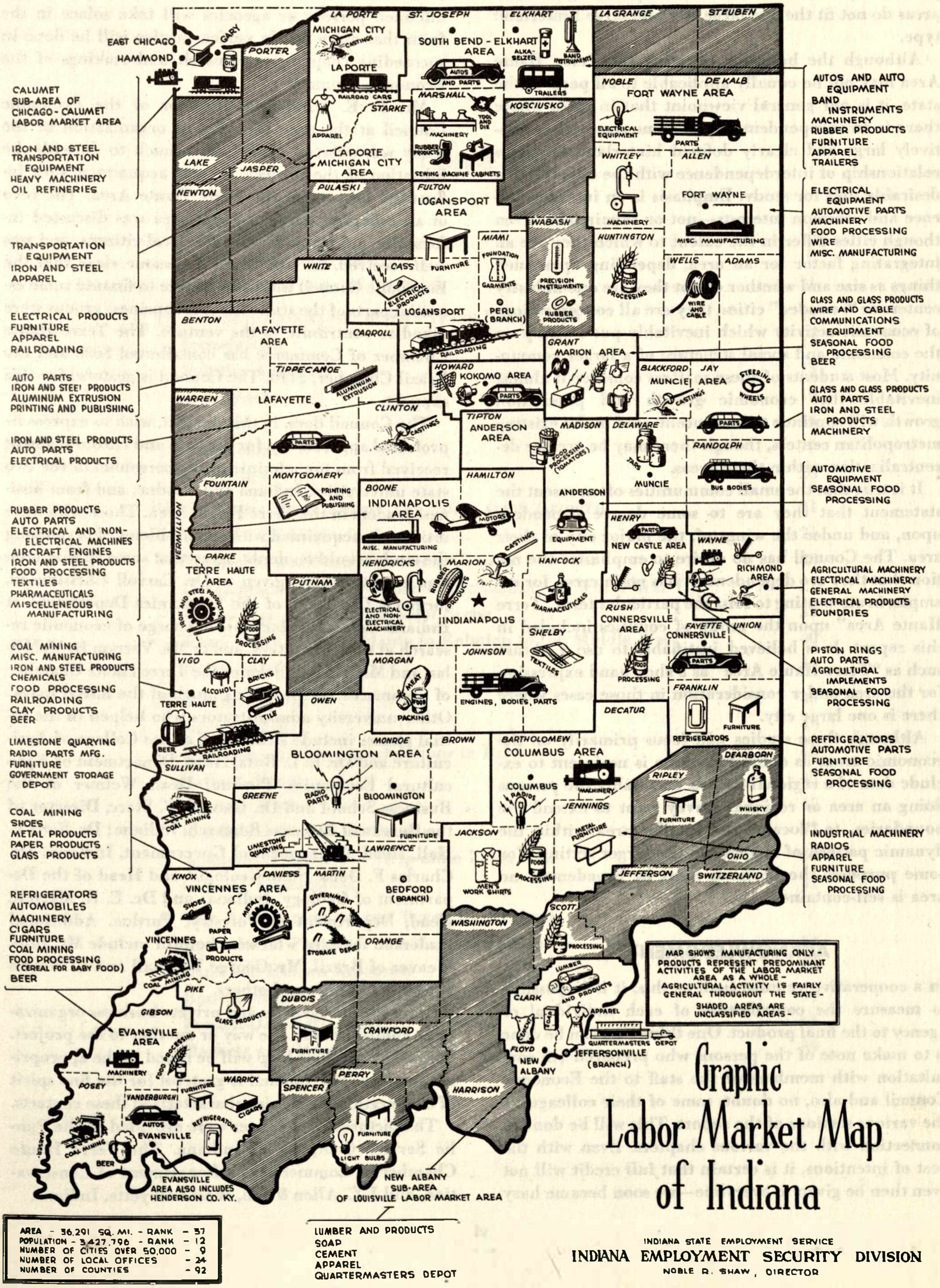
From the beginning it was the Council's intent that the area surveys be made from a somewhat detached point of view. It was felt that the more intimate type of association would be too time-consuming and would probably result in more involvement in local issues and personalities than is required for the "background" type of research envisaged. The research staff considered that it need aim only for a level of rapport with local people that would ensure local interest and a willingness to provide such factual data as might be needed. Thus, the studies are clearly not of the self-analysis or promotional type in which the evaluations and ideas of the local people are emphasized. Perhaps more can and should be done in that direction.

One of the most significant things about this study is the fact that the two state universities are cooperating with the Economic Council. The idea of such cooperation in economic research has borne its first fruit. Such activity is not easily arranged. The Council had to (in this case, and evidently will have to in any succeeding studies) consider carefully the most efficient allocation of its very limited financial assistance among the university people available. The heads of departments and staff members of the universities had to relate the project to their policies and plans. In the first study they generally selected suitable graduate students who could utilize the results of the research for theses or other credit. This almost necessitated an approach to this study which would leave them free to round out their parts following their interests, but with a view to supplying the Economic Council with a piece of research which would fit the general objective of the study.

Delineation of the Areas

Counties in Indiana have been grouped in various ways by the state and federal agencies and by research workers, according to the problem under consideration or the particular viewpoint of the delineator. One of these groupings is the "labor market area," a concept developed and used on various occasions by the Indiana Employment Security Division (in cooperation with the U. S. Bureau of Employment Security). (See accompanying map.) For several parts of the state, these areas include one sizable urban center and the surrounding territory from which workers are typically drawn. Such areas also conform fairly well with the retail trade area of the central city. The Terre Haute labor market area, in the west-central part of Indiana, is an example of this type.

Some areas do not fit this type. For example, there is a large sector of the state to the north and east of Indianapolis which has a number of smaller cities of about equal size, quite independent of one another as trade centers. Their industrial base is generally com-



CALUMET SUB-AREA OF CHICAGO-CALUMET LABOR MARKET AREA

IRON AND STEEL
TRANSPORTATION EQUIPMENT
HEAVY MACHINERY
OIL REFINERIES

TRANSPORTATION EQUIPMENT
IRON AND STEEL
APPAREL

ELECTRICAL PRODUCTS
FURNITURE
APPAREL
RAILROADING

AUTO PARTS
IRON AND STEEL PRODUCTS
ALUMINUM EXTRUSION
PRINTING AND PUBLISHING

IRON AND STEEL PRODUCTS
AUTO PARTS
ELECTRICAL PRODUCTS

RUBBER PRODUCTS
AUTO PARTS
ELECTRICAL AND NON-ELECTRICAL MACHINES
AIRCRAFT ENGINES
IRON AND STEEL PRODUCTS
FOOD PROCESSING
TEXTILES
PHARMACEUTICALS
MISCELLENEOUS MANUFACTURING

COAL MINING
MISC. MANUFACTURING
IRON AND STEEL PRODUCTS
CHEMICALS
FOOD PROCESSING
RAILROADING
CLAY PRODUCTS
BEER

LIMESTONE QUARYING
RADIO PARTS MFG.
FURNITURE
GOVERNMENT STORAGE DEPOT

COAL MINING
SHOES
METAL PRODUCTS
PAPER PRODUCTS
GLASS PRODUCTS

REFRIGERATORS
AUTOMOBILES
MACHINERY
CIGARS
FURNITURE
COAL MINING
FOOD PROCESSING (CEREAL FOR BABY FOOD)
BEER

EVANSVILLE AREA ALSO INCLUDES HENDERSON CO. KY.

AUTOS AND AUTO EQUIPMENT
BAND INSTRUMENTS
MACHINERY
RUBBER PRODUCTS
FURNITURE
APPAREL
TRAILERS

ELECTRICAL EQUIPMENT
AUTOMOTIVE PARTS
MACHINERY
FOOD PROCESSING
WIRE
MISC. MANUFACTURING

GLASS AND GLASS PRODUCTS
WIRE AND CABLE
COMMUNICATIONS EQUIPMENT
SEASONAL FOOD PROCESSING
BEER

GLASS AND GLASS PRODUCTS
AUTO PARTS
IRON AND STEEL PRODUCTS
MACHINERY

AUTOMOTIVE EQUIPMENT
SEASONAL FOOD PROCESSING

AGRICULTURAL MACHINERY
ELECTRICAL MACHINERY
GENERAL MACHINERY
ELECTRICAL PRODUCTS
FOUNDRIES

PISTON RINGS
AUTO PARTS
AGRICULTURAL IMPLEMENTS
SEASONAL FOOD PROCESSING

REFRIGERATORS
AUTOMOTIVE PARTS
FURNITURE
SEASONAL FOOD PROCESSING

INDUSTRIAL MACHINERY
RADIOS
APPAREL
FURNITURE
SEASONAL FOOD PROCESSING

NEW ALBANY SUB-AREA OF LOUISVILLE LABOR MARKET AREA

LUMBER AND PRODUCTS
SOAP
CEMENT
APPAREL
QUARTERMASTERS DEPOT

MAP SHOWS MANUFACTURING ONLY - PRODUCTS REPRESENT PREDOMINANT ACTIVITIES OF THE LABOR MARKET AREA AS A WHOLE - AGRICULTURAL ACTIVITY IS FAIRLY GENERAL THROUGHOUT THE STATE - SHADED AREAS ARE UNCLASSIFIED AREAS -

AREA - 36,291 SQ. MI. - RANK - 37
POPULATION - 3,427,796 - RANK - 12
NUMBER OF CITIES OVER 50,000 - 9
NUMBER OF LOCAL OFFICES - 24
NUMBER OF COUNTIES - 92

Graphic Labor Market Map of Indiana

INDIANA STATE EMPLOYMENT SERVICE
INDIANA EMPLOYMENT SECURITY DIVISION
NOBLE R. SHAW, DIRECTOR

plementary or similar (automotive parts, e.g.). These areas do not fit the one large city and large hinterland type.

Although the basis for selecting the Terre Haute Area may not be equally applicable to all parts of the state, it is our general viewpoint that in cases where there is an independent city of some size with a relatively large and clearly defined hinterland having a relationship of interdependence with the city, this is a desirable unit for study. Emphasis is on interdependence and common interests—not on dominance. Even though cities differ in the extent to which they are an integrating factor for an area, depending upon such things as size and whether or not they are one-industry centers or "rounded" cities, they are all concentrations of economic activity which inevitably put a stamp on the economic and social structure of a larger community. Most students of these matters consider it almost inevitable that economic growth and population growth will continue to be concentrated in the existing metropolitan centers, though there may be greater decentralization within these areas.

It is true that the small communities often resent the statement that they are to some degree dependent upon, and under the wings of, the major city of their area. The Council has no desire to emphasize the notion that they are dependent. It has no interest, for example, in attempting to foist the particular term "Terre Haute Area" upon the group of counties included in this report. It is believed justifiable to use a phrase such as "Terre Haute Area" as a shorthand expression for the area under consideration in those cases where there is one large city.

Although these studies will focus primarily on the economic areas as delimited, these is no intent to exclude data of a regional nature. Inevitably the persons doing an area or regional survey want to extend the boundaries, to "locate" the smaller area within the dynamic pattern of changes in the larger setting. For some purposes the horizons must be broadened—no area is self-contained.

ACKNOWLEDGMENTS

In a cooperative venture such as this, it is impossible to measure the contribution of each individual or agency to the final product. One thing that can be done is to make note of the persons who prepared (in consultation with members of the staff to the Economic Council and also, no doubt, some of their colleagues) the various sections of the report. This will be done in connection with the various chapters. Even with the best of intentions, it is certain that full credit will not even then be given to everyone—we soon became hazy as to the source of many of our ideas. We hope that any offended persons or agencies will take solace in the faith that more nearly perfect justice will be done in succeeding cooperative research undertakings of the Economic Council.

Mr. P. E. Middleton, Director of the Economic Council at the time the over-all organization of the study was effected (1949), had much to do with the initiation of the project. He was acquainted with influential persons in the Terre Haute Area. The idea of an economic survey in that area was discussed informally and formally with the local citizens, and was well received. In fact, when it became clear that the Economic Council would be unable to finance some essential parts of the study the local business groups were asked to contribute to the venture. The Terre Haute Chamber of Commerce has contributed $600 and the Brazil Chamber, $110. The Council is grateful for this support.

The Council does, in this context, wish to express its profound appreciation for the help and encouragement received from top administrative personnel of the two state universities, Indiana and Purdue, and from business leaders in the Terre Haute Area. Those who were intimately acquainted with the problems of organizing the study would no doubt agree that some special citation might well be given to Dr. Carroll Christenson, formerly Chairman of the Economics Department at Indiana University, but now in charge of economic research at that institution, and to Mr. Vernon R. McMillan and Mr. C. L. Shideler of the Terre Haute Chamber of Commerce, for providing much of the initial spark. Other university administrators who helped in the initial phases include Dean Reed of the College of Agriculture and Dr. E. L. Butz, Head, Department of Agricultural Economics, Purdue; Dean Weimer of the Business School and Dr. George W. Starr, Director of the Bureau of Business Research, Indiana; Dr. Ford P. Hall, Head, Department of Government, Indiana; Dr. Charles F. Deiss, State Geologist and Head of the Department of Geology, Indiana; and Dr. E. R. Martell. Head, Department of Forestry, Purdue. Additional leaders in the area who were helpful include Mr. John Weaver of Brazil, Mr. George Walthall and L. Wayne Jewell of Clinton, and others.

Several state agencies and private business organizations contributed in one way or another to the project. The nature of their help will be noted in the appropriate sections. The Council is grateful for the fine spirit of cooperation which also characterized these contacts.

The pictures on the cover were provided by the Public Service Company of Indiana, The Terre Haute Chamber of Commerce, the Department of Conservation, and J. C. Allen & Son, West Lafayette, Indiana.

CONTENTS

I INTRODUCTION 9

The Seven-County Area 9

The Central Theme of the Study 11

II PHYSICAL GEOGRAPHY OF THE TERRE HAUTE AREA 13

Introduction 13

Relative Location 13

Topography 16

Drainage 16

Climatology 19

Conclusion 20

III ECONOMIC DEVELOPMENT AND POPULATION GROWTH 21

Selected Highlights 21

Settlement and Early Economic Growth 22

Developments from the Turn of the Century to World War II . . 27

World War II and the Present Scene 35

The Growth of Terre Haute in Relation to the Middle West . . 40

Historical Bibliography 44

IV WATER RESOURCES 45

Introduction 45

Summary and Recommendations in Brief 45

Surface Water 45

Ground Water 47

Conditions County by County 47

Abandoned Mines and Strip-mine Lakes 50

General Conclusions 51

V THE AGRICULTURE OF THE TERRE HAUTE AREA

Agricultural Problems and Possible Solutions 53

Land and Human Resources 54

Basic Trends in Agriculture 59

Present-Day Agriculture 61

Markets and Marketing 69

Chapter I

INTRODUCTION

● After the members of the Economic Council agreed on the desirability of a long-range program for studying the economic characteristics of the various areas of the state, it was quite logical, in view of the series of events mentioned in the Preface, to consider the Terre Haute Area for the first study. It was emphasized that the staff of the Economic Council had, through talks before local business and civic leaders, become aware of the intense interest of several communities in the Terre Haute Area, including the major ones, in further examination of their economic conditions. These leaders took an objective view of the failure to grow in population. The study was begun after receipt of their expressions of interest (in some cases by formal action and in others merely informal) in an economic survey by the Economic Council and the universities. It was made clear that the local leaders would be called upon for assistance, and it was further understood that these business and civic leaders would be given an opportunity to review the study before publication. This course of action has been followed.

The choice of the Terre Haute Area for the study soon appeared to be more timely than was anticipated. The 1949 recession had been felt in a great many areas, but, according to the Bureau of Labor Statistics, some communities in the Terre Haute Area had a relatively severe degree of unemployment. Clinton and Terre Haute thus received considerable (unsolicited) publicity. Local leaders could not point to any particularly severe layoffs, and some people considered that the local situation was very nearly normal for their communities. The available data show that several Illinois cities to the south and west of Terre Haute were also experiencing more than average unemployment—e.g., Cairo, Centralia, Crab Orchard and Mt. Vernon were among the communities with a very substantial labor surplus. Danville was only slightly more fortunate in this respect.

However, business conditions in the Terre Haute Area improved in the latter part of 1949 and into 1950, much as elsewhere. Data provided by the Public Service Company of Indiana point to the strength of the Terre Haute economy in 1950. Industrial power usage increased from 15 million kw.-hr. in 1940 to 55½ million in 1950. Terre Haute and Clinton were taken off the list of so-called "distressed areas." Construction of a sizable plant (beginning late in 1950) for the Atomic Energy Commission north of Clinton should relieve Clinton's labor surplus condition for some time, although it is now impossible to make a reliable forecast of its effect.

This study may reveal more completely than heretofore the conditions underlying past evidence of weakness in the economy of the Area, and give some notion whether or not existing trends are likely to correct this past weakness. It may also lead to some ideas for more consciously coordinated local action. It should be emphasized that a study of this sort does not rely for its success merely on some immediate results, but must be addressed primarily to longer-range considerations.

THE SEVEN-COUNTY AREA

It has been noted that the Employment Security Division has previously defined the Terre Haute Area to include Vigo, Sullivan, Clay, Parke and Vermillion counties in Indiana. It is obvious that the two counties in Illinois nearest Terre Haute, Clark and Edgar, are at least partially in the Terre Haute labor market. A study of the commuting patterns of workers employed by various industrial firms, made by the Employment Security Division in March and April of 1950, showed that most of the workers in Terre Haute resided in Vigo County, but 2.8 percent commuted from Sullivan County, 3.6 percent from Clay, 0.7 percent from Parke, and 2.6 percent from Vermillion County (Fig. I-1). Only 0.5 percent crossed the Illinois-Indiana line to work in Terre Haute; presumably most of these came from communities to the southwest of Terre Haute, along the main highway (U. S. 40).

Although the results of this study do not demonstrate that Terre Haute is drawing heavily on out-of-county residents for its labor needs, it does show that there is some interdependence of these counties. Presumably additional labor requirements in Terre Haute would increase the amount of commuting, and decrease the existing degree of self-sufficiency of the local labor market. According to local information there is a sizable movement of workers out of Terre Haute on workdays, but this is said to be mainly to coal mines and brick plants within a 15-20 mile radius.

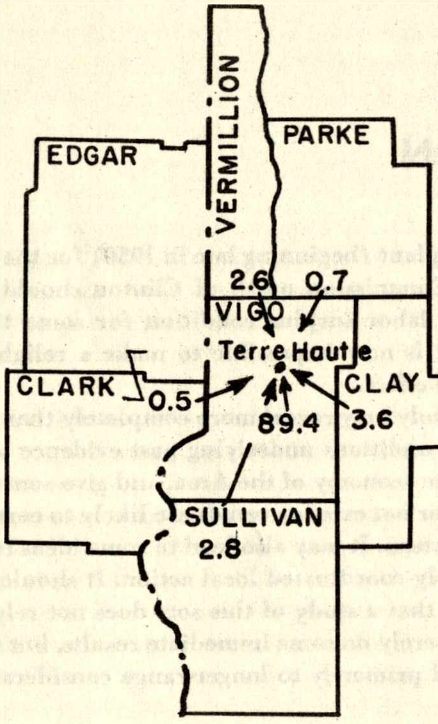


FIG. I-1
COMMUTING PATTERN OF INDUSTRIAL EMPLOYEES: 1950
(Percentage Distribution)

It is felt that another interesting check on the interdependence of the entire Area and the major city, Terre Haute, would be the extent of migration of young people from the surrounding area into the city to obtain a livelihood. By checking the birthplace reported on the marriage certificates of a sizable group of the young people (under 30 years of age) living in Terre Haute who married during selected months of 1948, it was possible to get a reasonably satisfactory idea of the proportion of the single young folks who resided in Terre Haute at that time but had moved in from surrounding counties.[1] The results show that the city of Terre Haute is drawing some young people from these surrounding communities, even though the Area as a whole is losing many young folks to the outside world. Of the young grooms, 4.4 percent came from Sullivan County, 4.4 percent from Clay, 2.0 percent from Parke, 2.9 percent from Vermillion, 2.5 percent from Edgar and 0.5 percent from Clark County. Among the brides, the percentages were as follows: Sullivan, 4.5 percent; Clay, 4.5 percent; Parke, 0.4 percent; Vermillion, 2.2 percent; Edgar, 0.8 percent; and Clark, 0.8 percent. About 65 percent of the grooms and 57 percent of the brides reported Vigo County as their birthplace.[2] This does leave a considerable proportion who came from other areas, in particular the remainder of Indiana and Illinois.

Even though the interdependence of the major city and the remainder of the Terre Haute Area does not appear, from the evidence already presented, to be notably strong, it was certain even at the beginning of the study that Terre Haute's retail trade area (for other than convenience goods) would encompass much of the seven-county area. The map prepared to outline the trade area (shown in the Business chapter, below) defines reasonably well the area selected for inclusion in this study.

Assuming that we mean by dominance only that there are some things, such as wholesaling, business and personal services, manufacturing activities, etc. for which the outlying areas are dependent upon the central city and must exchange their own goods and labor to have them, one cannot at this stage say that Terre Haute dominates the Area in precise ways and to precise degrees.[3] It is clear, though, that there are no foreseeable economic developments in the Area which will not have some direct influence on Terre Haute, whether or not the growth or contraction of industry at the bottom of such change be centralized in Terre Haute or elsewhere. However, at some of the margins of the Area the influence may be relatively minor. Thus, the additional employment of about 1,500 persons during the construction phase (and probably fewer for operation) at the Atomic Commission's plant near Newport, approximately 30 miles north of Terre Haute, may mean considerably less to Terre Haute City than it would have if the plant had been located 10-15 miles nearer the city. Newport is practically at the margin of the area from which Terre Haute attracts specialty shoppers, so much of the large payroll created will be spent in other cities. This is assuming, of course, that the residential pattern of workers will eventually be (roughly) centered near the plant. However, wholesale trade, transportation, and the like will be directly affected. It will be clear to the reader that the smaller cities, except for Clinton, are not likely to be much affected by this development.

---

[1] Records in the surrounding counties were checked in order to find cases wherein the residents of Terre Haute went to a neighboring county—perhaps the home county of the bride or groom—to marry. It is almost certain that the true percentages were somewhat higher, since some brides, especially, would probably give their home address.

[2] A study of Madison, Wisconsin, using this technique, showed a far larger proportion of migrants from nearby areas. Only 35 percent of the males and 41 percent of the females were born in Dane County (county seat Madison). This has been a rapidly growing community, now larger than Terre Haute.

[3] This is the concept of metropolitan dominance developed by Don J. Bogue in *The Structure of the Metropolitan Community*, University of Michigan, 1949, page 40. It is quite clear, as will be shown later, that Terre Haute is too small to be an independent, highly dominating center, but is quite specialized and dependent itself.

From some viewpoints it is certain that the geographical unit chosen is not defensible. Evidently it is quite heterogeneous as regards agriculture. Many would say that the area of study should have been selected to cover the coal-producing counties, making the coal problem the central theme. However, it seemed preferable to give attention to the whole economic picture; a broader perspective would seem to be more meaningful to the people living in the local communities. Loyalties of the residents are primarily to their localities, but the horizons of many persons encompass larger areas of the sort considered herein—an area in which business and social relationships and experiences are reasonably intense.

Finally, although the two counties in Illinois nearest Terre Haute, Edgar and Clark, are considered part of the Area, they will not be given the same amount of attention in each phase of the study as the Indiana counties.

THE CENTRAL THEME OF THE STUDY

An examination of the main conclusions of the study of the Terre Haute Area by the Employment Security Division helped to set the framework for this study. Significant statements include the following:

> "The decline in coal mining employment is the primary factor responsible for the condition of labor surplus, but there are other significant factors. Manufacturing employment not only declined more during the depression years, but made no significant recovery during the Thirties, unlike the trend in the state and nation as a whole. Various theories have been advanced in explanation of this trend, and undoubtedly several factors are involved. The declining employment in coal mining brought some decreases in related activities; employment in the stone, clay and glass industry was also declining in this period; prohibition brought about a significant loss of employment in glass products plants as well as the direct loss in breweries and distilleries; and a bitter and prolonged labor dispute in 1935 discouraged the entry of new establishments into the area."

* * *

> "Examination of employment conditions in the area reveals a marked bias in the industrial composition of the area. There are no sizable firms in the automotive, aircraft, machinery, metal-working or electrical manufacturing groups. The absence of large manufacturing firms in the industrial groups which normally pay high wages and employ substantial numbers of workers and which have accounted for much of the expansion of other areas in the past 25 years, is undoubtedly an important factor in the development of surplus labor."

This study was begun with an awareness that gloomy forecasts had been made about local economic prospects. These had, of course, been based upon certain kinds of evidence which, at least as far as they went, were quite convincing. A leading student of population, Dr. Philip M. Hauser, prepared an article for the *Journal of Marketing* (January 1944) in which he listed Terre Haute (Vigo County) among the metropolitan areas that lost in population during World War II, grew little if any in the two preceding decades, and "therefore, cannot be expected to grow rapidly or even to recoup their losses in the postwar period." This statement aroused much local feeling. More recently in an official release ("Classification of Labor Market Areas According to Relative Labor Supply," January 1, 1949), the U. S. Department of Labor listed Terre Haute with coal mining areas which had been more or less "problem" areas since the 1920's and concluded that "prospects for any appreciable increase in total employment in these areas are dim." Presumably this was considered to be a short-term rather than long-term forecast.

Regardless of whether or not one agrees that such "prophesies" are the better part of wisdom in economic affairs, he will no doubt agree that the type of information on which they were based presents a striking picture. Two of the best indexes of economic development are employment in the main secondary industries, manufacturing and mining, and growth of population. Of the five Indiana counties in the Terre Haute Area, each one had a considerably smaller part of the total Indiana employment in manufacturing and mining (combined) in 1947-48 than in 1929-30. (See Table I-1.) Each also had a smaller part of the state's popula-

Table I-1.—Employment in Manufacturing and Mining (Combined)[1] and Population of Five-County Area as a Percentage of Indiana Totals, for Specified Periods

AREA	EMPLOYMENT 1929-30	EMPLOYMENT 1947-48	POPULATION 1930	POPULATION 1950
Five Counties, Combined	**5.98**	**3.23**	**5.97**	**4.79**
Clay	.87	.45	.82	.61
Parke	.22	.08	.51	.40
Sullivan	.79	.17	.87	.60
Vermillion	.90	.18	.72	.50
Vigo	3.20	2.35	3.05	2.68

[1] The employment figures for mining, 1930 and 1948, are not strictly comparable, but appear to be reasonably so. Calculations were made to two decimal places for comparisons where percentages are very small. They are not presumed to be accurate to that degree.

Sources: Census of Manufactures, 1929 and 1947; Mining-Fifteenth Census, "Composition and Characteristics of Population," and 1948, Employment Security Division; Population-Population Censuses.

tion in 1950 than in 1930, indicating in this respect also a failure to grow at the average state-wide rate during this period. Even granting that limitations of the available data (mining statistics, especially) may slightly exaggerate the decline in the percentage of the state's employment in manufacturing and mining, one would have to admit that the relative losses that occurred in such counties as Vermillion and Sullivan, in particular, are startling.

The five counties as a whole had about the same percentage of the state's employment in the chief secondary industries as they had of the state's population in the 1929-30 period. This seems to indicate that these counties were in an "average" situation for Indiana in their ratio of industrial workers to population. Parke County, largely rural, was not so nearly average as the other counties. In the later period the Area had about 4.8 percent of the state's population but only about 3.2 percent of employment in manufacturing and mining. Barring the rather doubtful possibility that the employment base shifted greatly from secondary industries to agriculture (primary) and business (tertiary), with increasing job opportunities in these latter groups, the figures must point to unemployment and underemployment. The records of the Employment Security Division show that this was the case during most of the period surveyed, including the late Forties.

The two counties in Illinois, Clark and Edgar, had about the same percentage of Illinois' employment in manufacturing and mining in 1947-48 as they had in 1929-30. They are largely agricultural. Both had a smaller part of Illinois' population in 1950 than in 1930.

It is obvious that this economic survey had to be somehow related to this background, but it was never intended that it should dwell mostly on past problems or that its primary conclusions should be some kind of generalization about the Area's future, whether bright or gloomy. True, "What's past is prologue." Some history is needed, but major emphasis in the study is upon the assets and liabilities of the Area at the present time, as seen through the eyes of the specialists studying the natural, capital and human resources. Even in the earliest stages of the study it was obvious that the asset side of the picture would be quite impressive—the earlier study by the Employment Security Division had noted the paradox of failure to expand industrially in the face of many advantageous features. The Area's potentialities must be seen in relation to a developing national and regional economy.

In keeping with the foregoing, the general theme of the study is that the failure of the Terre Haute Area to hold its own in the economy of the Midwest since the decade 1910-20 has been due to changes in technology and in the availability or utility of certain resources, but that there are probably some or many resources and locational advantages which afford a basis for economic growth in the foreseeable future. The crux of the study is, of course, to build up factual evidence, whether it is positive or negative in its implications, to offer to those who will have to make actual decisions to invest in the Area.

Ideally, the study would have consisted of an intensive and highly integrated investigation within the above framework. In view of the fact that many specialists have developed their particular sections, and inevitably with less contact and cross-fertilization of ideas than would ideally take place, the study actually follows more or less traditional lines, with sections on the physical setting, population changes, the various natural resources, agriculture, industry and business, government, utilities, and recreation.

Chapter II

PHYSICAL GEOGRAPHY OF THE TERRE HAUTE AREA

Thomas Frank Barton
Indiana University

● The Terre Haute Area is located primarily in west-central Indiana astride the Indiana-Illinois boundary. A line drawn from Chicago on Lake Michigan to Evansville, Indiana, on the Ohio River crosses this area. The five counties in Indiana cover 1,929 square miles or about 5.3 percent of the state. The two in Illinois contain 1,114 square miles.

Terre Haute, the largest city, is the focal point of its many activities. It is approximately 170 miles south of Chicago and 100 miles north of Evansville (Fig. G-1). Seventy-three miles to the northeast is Indianapolis, capital of Indiana, while 130 miles to the northwest is Springfield, capital of Illinois. It is interesting to note that Terre Haute is about the same distance from the metropolitan areas of Chicago, St. Louis, and Cincinnati. Lines connecting these metropolitan areas form a rough triangle enclosing the Terre Haute Area. These cities are only a few transportation hours from Terre Haute, and they compete with it in many ways.

RELATIVE LOCATION

Neighbors. About an hour's drive or between 40 and 65 miles from Terre Haute are a number of smaller cities, which although outside the Area, do exert an important influence upon the flow of goods and people within it and tap the region's trade. Although some of the cities are over 60 miles from Terre Haute, they are only a few miles from the edges of the Area. Starting on the northwest is Danville, Illinois, the largest of the encircling group (Fig. G-1). Danville is only a few miles from the northern part of Vermillion County and 59 miles from Terre Haute. People living in Newport, the county seat of Vermillion County, are closer to Danville than to Terre Haute.

Crawfordsville, sixty-two miles to the northeast, is only a few miles from the northeastern border of this area. Continuing in a clockwise direction around Terre Haute, we find Greencastle 40 miles to the east; Bloomington 59 miles to the southeast; Vincennes 58 miles to the south; Lawrenceville, Illinois, 66 miles to the southwest; and Mattoon, Illinois, 63 miles to the west-southwest.

Within the Area are eight smaller communities with populations between 2 and 10 thousand (Fig. G-2). These are Paris (9,794), Brazil (8,426), Clinton (6,576), Sullivan (5,430), West Terre Haute (3,356), Marshall (2,980), Casey (2,727), and Rockville (2,459). As will be indicated in a later section of the report dealing with trade, these communities are dependent upon Terre Haute for wholesale goods, specialty goods, and the like.

Early water transportation. Early growth was due in part to a central location between the two great waterway systems of transportation that flourished in the states carved from the Northwest Territory during the first half of the nineteenth century, namely the Ohio River and the Great Lakes. It was to open up the comparatively inaccessible area between these two waterways that the federal government constructed the National Road. Terre Haute and Richmond were important centers on this road; they are still the west and east anchors of this principal thoroughfare through central Indiana.

The Area's early growth was also aided by the Wabash-Maumee (or Erie) Canal, which reached Terre Haute in 1849.

The land. Although the founding fathers were unaware of the fact, they located the city of Terre Haute in the northern end of the Wabash Lowland. This physiographic province proved to be better equipped by nature for the development of agriculture than any of the other six physiographic provinces in southern Indiana. The Terre Haute Area is located primarily in the Wabash Lowland but is partly in the agriculturally richer plain to the north.

After a century of increasingly mechanized farming, the Terre Haute Area is considered by the Bureau of Agricultural Economics to be within the "Feed Grains and Livestock (Corn Belt)" type of farming region. It is a sort of local southerly projection of that region—the region considered by many to be the agricultural heart of the United States and North America. However, outside the river valleys much of the cropland in the Area has proven economically submarginal or marginal in character in competition with other cultivated land in central Indiana, Illinois and Iowa. Although located in a southerly peninsula of the Corn Belt, much of the land is too wet, too sandy, too acid and/or too infertile and too often subject to flooding to be classified as good cropland. This is truer of the southern than the northern part of the Area. A large number of farms are classified as "self-sufficing" and "part-time." Some of the Area has land suitable for strip-mining operations—another factor to consider in relating the location relative to other areas.

Minerals. From the standpoint of minerals, the Terre Haute Area is located in the northeastern edge of both the Eastern Interior coal field and the Illinois-Indiana petroleum field. This area has long been known for its coal industry, and its easily mined, comparatively low-priced coal is one of its greatest assets. In addition to the local petroleum supply, the Area sits astride a great concentration of pipe lines. Petroleum pumped to the Atlantic coast from the mid-continent field in Texas and Oklahoma passes through pipe lines laid across Indiana, Ohio and Pennsylvania. There remains in many cases, however, the problem of authority to tap these lines to obtain supplies for local use.

Transportation. Besides petroleum pipe lines, there are good transportation facilities of other types. Three national highways focus on the center of this region, namely, highways 40, 41 and 150 (Fig. G-1). A complex network of railroads, crossing each other in this area, provides transportation in all four cardinal directions. (See later chapter on transportation and utilities.) The Trans World Airline and the Southern Airline routes cross here.

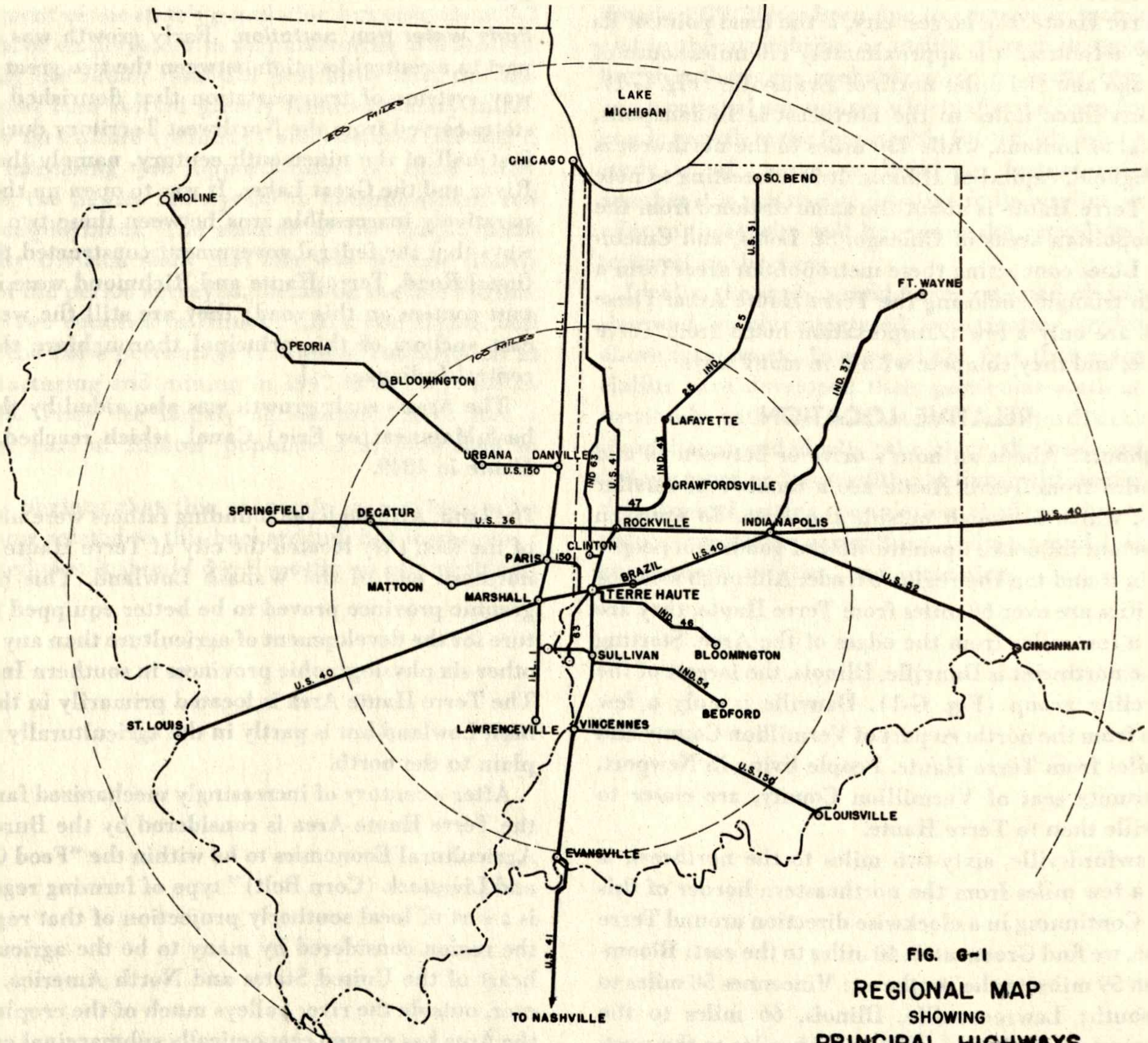


FIG. G-1

REGIONAL MAP
SHOWING
PRINCIPAL HIGHWAYS
SERVING TERRE HAUTE AREA

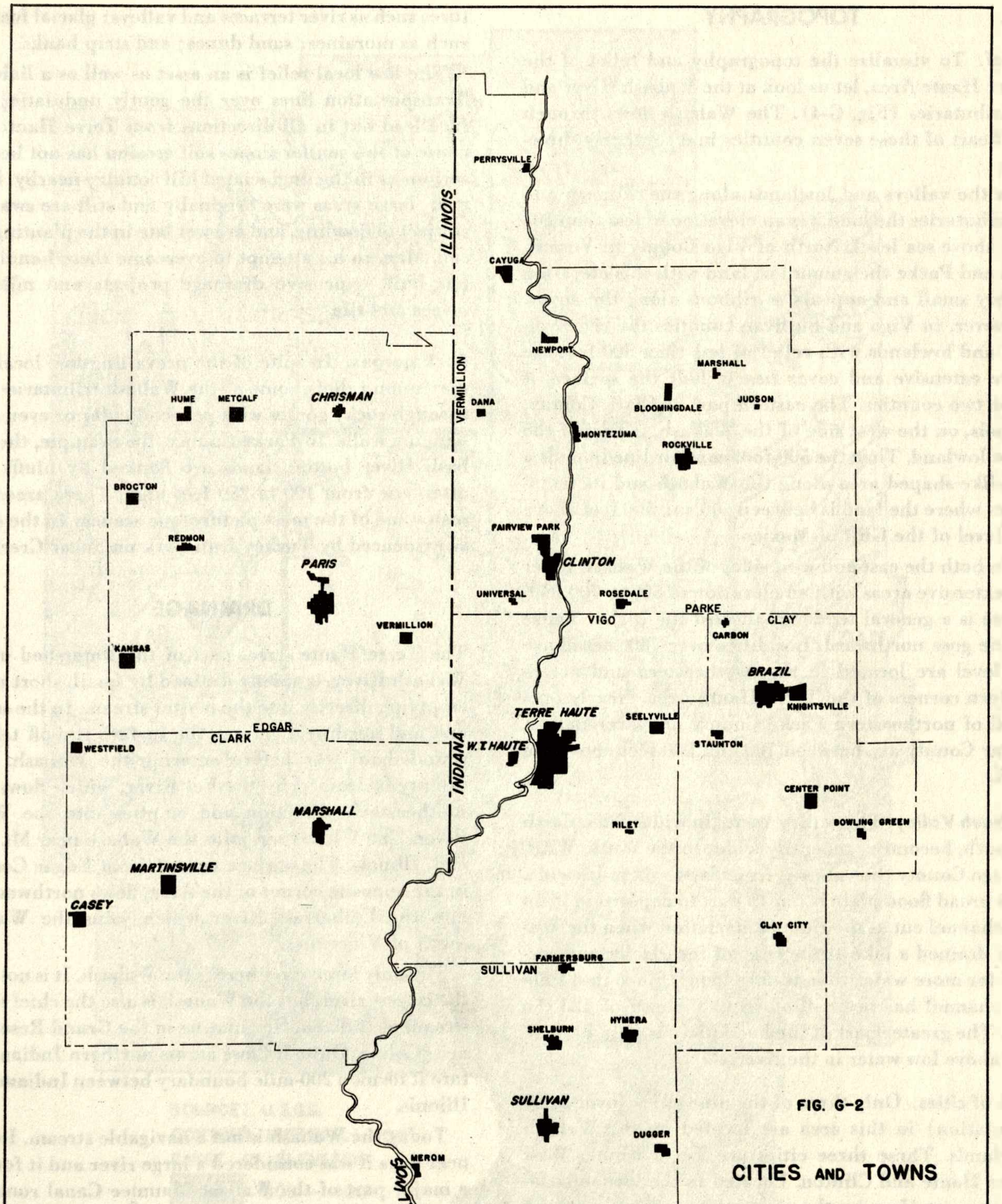


FIG. G-2

CITIES AND TOWNS IN THE TERRE HAUTE AREA

INDIANA ECONOMIC COUNCIL 1950

TOPOGRAPHY

Relief. To visualize the topography and relief of the Terre Haute Area, let us look at the Wabash River and its tributaries (Fig. G-4). The Wabash flows through the heart of these seven counties in a southerly direction.

In the valleys and lowlands along the Wabash and its tributaries the land has an elevation of less than 500 feet above sea level. North of Vigo County in Vermillion and Parke the amount of land with this elevation is very small and appears as ribbons along the rivers. However, in Vigo and Sullivan counties the river valleys and lowlands with relief of less than 500 feet are more extensive and cover nearly half the surface of these two counties. The eastern part of Clark County, Illinois, on the west side of the Wabash, is part of the same lowland. Thus the 500-foot contour line bounds a tree-like shaped area along the Wabash and its tributaries where the land is between 400 and 500 feet above the level of the Gulf of Mexico.

On both the east and west sides of the Wabash River are extensive areas with an elevation of 500 to 700 feet. There is a general tendency toward the higher figure as one goes northward. Localities over 700 feet above sea level are located in the northeastern and northwestern corners of the Terre Haute Area. Nearly one-third of northeastern Parke County and over half of Edgar County are between 700 and 800 feet above sea level.

Wabash Valley. This valley varies in width from north to south, becoming generally wider to the south. Within Vigo County the valley is from five to six miles wide. This broad flood plain is due in part to deposition in an old channel cut at the time of glaciation when the Wabash drained a lake at the edge of the glacier and carried far more water than it does today. Since that time the channel has been silted in to a depth of 120-150 feet. The greater part of the flood plain is only 14 to 18 feet above low water in the river.

Sites of cities. Only three of the nine cities (over 2,000 population) in this area are located on the Wabash Lowlands. These three cities are Terre Haute, West Terre Haute and Clinton. Located in the lowlands adjacent to or close by the river, they are in danger of flood. Because of their sites above 500 feet, the other six cities have not been subject to floods.

Low local relief. Within the Terre Haute Area the local relief (the distance from the highest point to an adjacent lowest point) is generally less than 150 feet. The surface of this undulating glacial plain is relieved of topographic monotony by natural and man-made features such as river terraces and valleys; glacial features such as moraines; sand dunes; and strip banks.

The low local relief is an asset as well as a liability. Transportation lines over the gently undulating surface lead out in all directions from Terre Haute. Because of the gentler slopes soil erosion has not been as serious as in the unglaciated hill country nearby. However, large areas were originally and still are swampy, subject to flooding, and are wet late in the planting season. Man, in his attempt to overcome these handicaps, has built expensive drainage projects and miles of levees and tile.

Rock gorges. In spite of the prevailing low local and maximum reliefs, some of the Wabash tributaries flow through rocky gorges with perpendicular or even overhanging walls. In Parke County, for example, the Wabash River bottom lands are flanked by bluffs that often rise from 100 to 250 feet high. These areas furnish some of the most picturesque scenery in the state, as evidenced by Turkey Run Park on Sugar Creek.

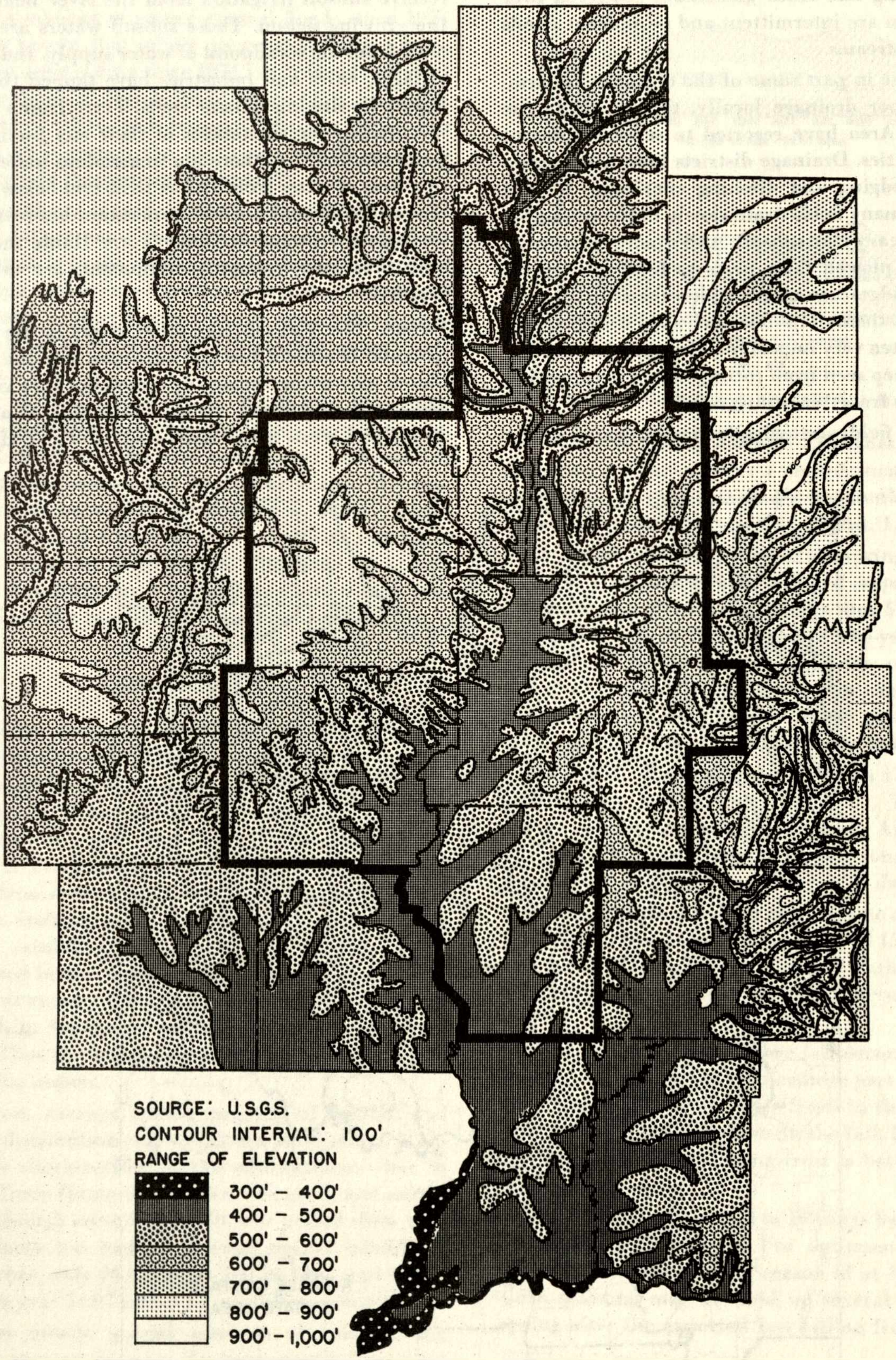
DRAINAGE

The Terre Haute Area, part of the watershed of the Wabash River, is chiefly drained by small, short rivers emptying directly into the master stream. In the southeast and northwest corners the surface run-off takes a round-about way before entering the Wabash. Clay County is drained by the Eel River, which flows in a southeasterly direction and empties into the White River. The White then joins the Wabash near Mt. Carmel, Illinois. The surface run-off from Edgar County, in the opposite corner of the Area, flows northwesterly into the Embarrass River which joins the Wabash south of Vincennes.

The only large river here is the Wabash. It is not only the largest river, but the Wabash is also the chief trunk stream of Indiana. Originating in the Grand Reservoir near Celina, Ohio, it flows across northern Indiana before it forms a 200-mile boundary between Indiana and Illionis.

Today the Wabash is not a navigable stream. In pioneer days it was considered a large river and it formed a major part of the Wabash-Maumee Canal route. In the 1820's hundreds of flatboats were sent down the river, and after 1823, during high waters in the spring steamboats ascended the river to Lafayette and occasionally to Peru.

The Wabash and other streams flow through broad, comparatively level valleys which appear much too large for the present streams. These valley bottoms consist of alluvial materials, such as sand and gravel,



TOPOGRAPHIC FEATURES,
TERRE HAUTE AREA AND VICINITY

FIG. G-4

INDIANA ECONOMIC COUNCIL 1950

dropped during and since glaciation. Scattered over the flood plain are intermittent and permanent ponds and sluggish streams.

To overcome in part some of the obstacles to farming due to poor drainage locally, the people in the Terre Haute Area have resorted to several different types of activities. Drainage districts have been organized, and dredging and ditching continues. Despite these efforts, many fields drain slowly in the spring because of the heavy clay subsoil. And in some places the farmers have plowed their fields to form low-topped ridges—the ridges are much wider than the depressions between them. The few inches of difference in elevation is often very important; they provide enough drainage to keep seed from rotting before germination and the plants from "drowning out."

Some of the fields strategically located near the river receive subsoil irrigation from the river beds during the growing season. Those subsoil waters are also an asset from the standpoint of water supply. Individuals, villages, cities and industries have tapped this water supply by sinking tubular wells. Terre Haute citizens, in stressing the advantages of their city for industry, point out that "... there is a tremendous underground reservoir of water from 15 feet to 50 feet below the surface of the ground, with a temperature between 50 and 55 degrees Fahrenheit. Many Terre Haute industries, with their own pumping equipment, are using this supply."

Floods. The Wabash, like other rivers in the Area, is irregular in annual flow and fluctuates with the seasons. Floods may occur during any season but they generally come in the winter or spring. "According to available data, flood crests above flood stage at Terre Haute oc-

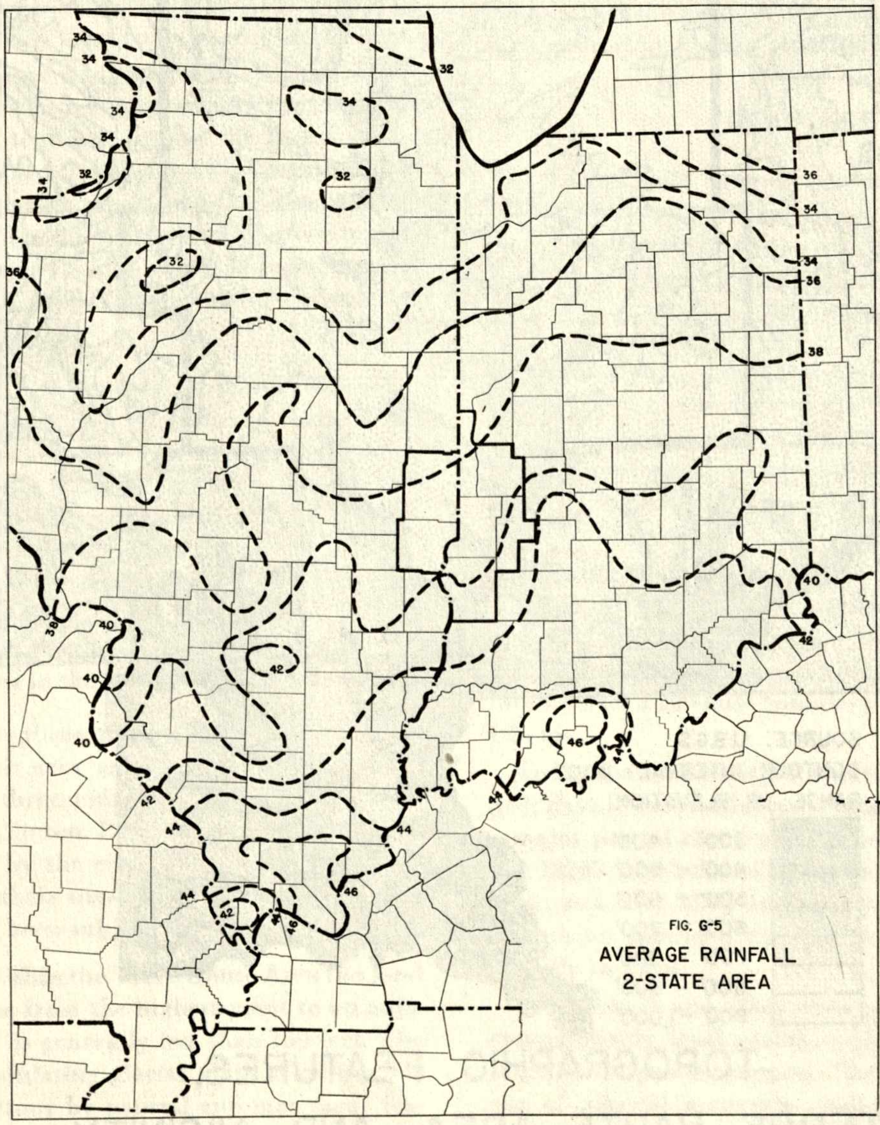


FIG. G-5
AVERAGE RAINFALL
2-STATE AREA

cur on an average of 2.6 times per year. There are records of a number of severe general floods since 1874, and it is known that others occurred at earlier dates. The most outstanding since 1874 (in order of severity) were the floods of March 1913, August 1875, May 1943, March-April 1904, and January-February 1916. The flood of 1913 caused the maximum known stages at many stations throughout the basin."[1]

"According to surveys by the Corps of Engineers, U. S. Army, 90 percent of the flood damage in the Wabash River Basin is in the rural areas. In the urban areas of the region under consideration it has been estimated that Clinton suffers $2,490 average annual flood damage and West Terre Haute $8,110 average annual flood damage."[2]

Here, as along parts of the Mississippi, Ohio and lower tributaries of the Wabash, levees have been constructed. At first levees were constructed and paid for by private individuals and local governments. More recently levees have been constructed by federal agencies. The Niblack Levee, located in Sullivan and Knox counties, is under construction. The latter levee and the Gill Township Levee in Sullivan County were constructed for the protection of agricultural land.

CLIMATOLOGY

The average annual precipitation of this area is between 36 and 42 inches. Most of it comes in the form of rain. Generally speaking, the amount of rainfall, not only in the Area but also for the entire state, increases from north to south (Fig. G-5). The average annual rainfall at Terre Haute is 39.47 inches. Parts of northern Indiana receive less than 34 inches and parts of southern Indiana more than 46 inches. The average monthly rainfall throughout the year is more evenly distributed in the Area than in northern Indiana (Fig. G-6). This average is above 2.5 inches, with the months of March to September inclusive receiving over three inches. Thus the wet season coincides with the warm or growing season.

However, average annual amounts of rainfall and average distributions are sometimes misleading. Variability is characteristic of the midcontinent—less so around Terre Haute than toward the north and northwest. Although records for a 40-year period show that Terre Haute has had an average annual rainfall of 39.47 inches, only 29.02 inches fell in 1944, and in the following year 54.07 inches of rainfall was recorded.

Besides erratic annual amounts of rainfall, the monthly average amounts also vary greatly from year to year. For example, in May 1943, 11.94 inches of rain fell at Terre Haute whereas the average for that month over a 40-year period was only 3.9 inches. This extreme was followed that year by a period during which only 5.8 inches of rain fell in three months—June, 1.36 inches; July, 2.89 inches; and August, 1.55 inches.

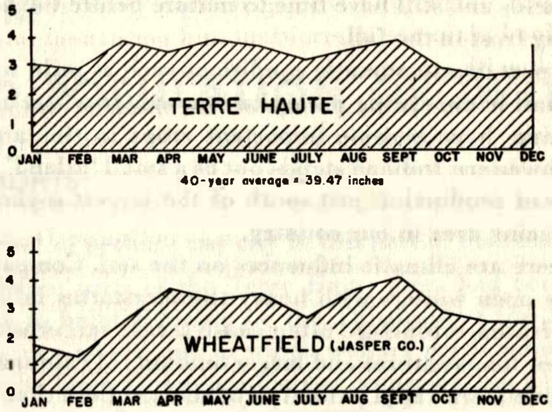


FIG. G-6

AVERAGE DISTRIBUTION OF RAINFALL IN INCHES

Sometimes too much rain in the spring holds up the planting of crops, the cultivating of crops, and the harvesting of hay. For example, more than 5 inches of rain fell during May in 16 years out of a 65-year record and in June rainfall in excess of 5 inches occurred in 19 out of 65 years. After the land dries enough to permit cultivation, and the crops are finally planted, the rainfall sometimes becomes abnormally low.

Most of the Terre Haute Area has a 170-180 day period without killing frost (Fig. G-7). This frost-free period in the southwestern part of the Area, the southern part of Clark County, is 10 days longer and in the opposite or northeastern corner is 10 days shorter.

For most of the Area the average date of the last killing frost in the spring is between April 15 and 20. However, in over half of Vermillion and Parke counties the last killing frost comes sometime between April 25 and 30.

The first killing frost in the fall occurs between October 15 and 20. Just as the northern part of Vermillion and Parke counties get later frosts in the spring, they also get earlier killing frosts in the fall. Here the average date of the first killing frost is between October 10 and 15.

A growing season of 170 to 180 days has a significant influence on agriculture. For optimum growth corn needs a frost-free growing season of at least 130 days. Corn planting may be held up several weeks in the spring after the expected last killing frost because of wet fields and still have time to mature before the first killing frost in the fall.

---

[1] Data supplied by Preston McGrain, Indiana Flood Control and Water Resources Commission, November 10, 1950.

[2] Ibid.

In part due to climatic conditions such as mild winters and heavy spring precipitation, winter wheat and soybeans have become important crops in this area. Southwestern Indiana stands out as a small "island" of soybean production just south of the largest soybean producing area in our country.

There are climatic influences on the soil. Comparatively open winters with heavy thunderstorms falling on a frozen subsurface often cause severe soil erosion. Higher temperatures and larger amounts of rain make possible more rapid oxidation of the soil here than in northern Indiana. Moreover this process contributes to the destruction of humus and consequently farmers here have a greater problem of maintaining humus in the soil than those living farther north.

For most of the Terre Haute Area the average January temperature is between 28° and 32° F., and the average July temperature is between 74° and 78°.

CONCLUSION

The physical geographic setting is only one of the factors used in interpreting the present development of the Terre Haute Area. Not only has the physical environment played an important role in the past but it will continue to do so in the future. True, with our advanced technology, we are able to change and overcome part of our physical environmental handicaps. Plans for future development, however, should be carefully examined in light of the physical setting. This brief survey provides only a general perspective, and additional geographic information will be used in the following chapters. Nevertheless, individual action and projects should be carefully related to detailed inventories of physical geography.

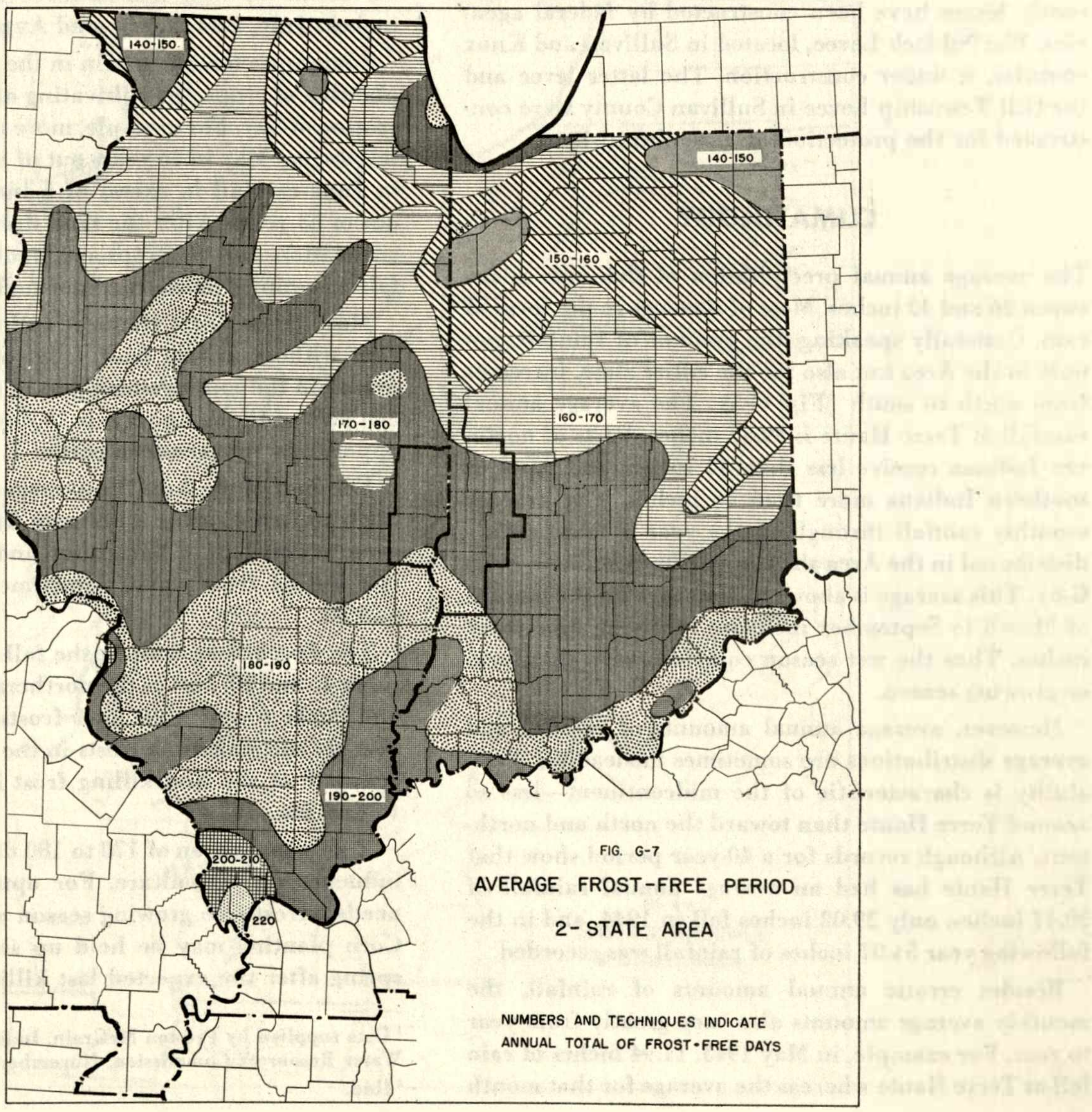


FIG. G-7

AVERAGE FROST-FREE PERIOD

2-STATE AREA

NUMBERS AND TECHNIQUES INDICATE ANNUAL TOTAL OF FROST-FREE DAYS

Chapter III

ECONOMIC DEVELOPMENT AND POPULATION GROWTH[1]

SELECTED HIGHLIGHTS

1. "Southerners," often moving by stages and in groups of families, evidently settled most of the Terre Haute Area originally, but many individuals and families from the eastern states were among the earliest settlers. This admixture is quite typical of the Lower Midwest Region of America. No doubt the bulk of these people traced their ancestry to the British Isles. The Area is notably native-American in ethnic complexion; unlike the Great Lakes Region, this region was not providing many job opportunities during the decades of heavy immigration.

2. The early agricultural development and the "frontier" industries were in a favorable situation marketwise because of the water transportation provided by the Wabash River. Commercial "know-how" developed early in the river communities. Terre Haute's lead in commerce was reinforced and its future importance in west-central Indiana ensured when the railroad pattern was established.

3. In addition to the omnipresent "frontier" industries, of which pork-packing, milling and distilling became of far more than local importance during the nineteenth century, the Area's industrial economy has for a long time been underpinned by the clay products and coal industries and to a lesser extent the oil resources. The (now defunct) iron industry was important around 1870.

4. Three institutions of higher education are valuable assets.

5. Population growth in the Area was at about the same rate as in Indiana until 1920, but there has been an absolute loss in population in the Area since 1920. The three "agricultural" counties, Parke, Clark and Edgar, reached their peaks first, then Clay (1900), Sullivan (1910) and Vermillion (1920). In the face of changes in technology in agriculture and coal mining they failed to provide new jobs to replace those lost. Vigo has widened the gap between its size and that of its neighbors since 1850.

6. All-time peaks in mining and manufacturing employment were reached during the World War I period. Terre Haute received a series of blows in the 1920's, in addition to the decline in employment in the coal mines. Relatively, Clinton experienced the most tragic decline in its economic base (closing of coal mines) of perhaps any city in this part of the country.

7. Large parts of the Terre Haute Area had become used to belt-tightening by the Thirties, but the Area was, as a whole, one in which welfare needs were unusually large. Out-migration was occurring, but a large group seemed more or less stranded.

8. There was a flurry of ordnance construction (three establishments) in the 1942-43 period, leading to high over-all employment for a time, but generally downward after 1943 because of a decline in construction work. Many industries experienced gains in the war and postwar periods.

9. Of the larger communities, Terre Haute and Clinton seemed especially vulnerable during the 1949 recession. Illinois cities to the southwest and west of Terre Haute appear to have displayed a similar weakness. Characteristically, these cities are outside the automotive-machinery manufacturing belt.

10. As to age-sex composition of the population, it is noteworthy that the Area has had an unusually large proportion of old persons and, in some counties, persons of school age. The deficiency (using Indiana as a norm) has been generally in the young adult age groups, but also, more recently, in the youngest age groups. The 1930 and 1940 censuses show relatively low fertility, but Area fertility was higher than average for the state around 1920. This explains in part the relatively large numbers of residents of school age noticeable in the 1930 census and even persisting in the 15-19 age group in 1940. Statistics for 1950, not yet available, will probably show a relatively small proportion of children.

11. In general, the Area has been losing substantial numbers of residents, especially young people, by migration. Terre Haute attracts sizable numbers of youths from the rest of the Area, especially young women.

12. The Terre Haute Area, excluding the city of Terre Haute, is sparsely populated; in other words, the re-

---

[1] Much of the historical information in this chapter was prepared, in connection with their study of commerce, by a group of students working under the supervision of Dr. S. F. Otteson of the School of Business, Indiana University. These students were: Richard C. Andres, Donald Eisinger, Leon T. Kendall, Darwin E. Smith, and James P. Woods. The major responsibility for the data and the correctness of the interpretation must be assumed by Dr. Sundal of the Council's staff.

mainder of the Area has very modest investment in industrial facilities. This tends to set limits to Terre Haute's growth as a servicing center.

13. Terre Haute's growth curve was quite typical of cities in the Midwest until 1920, but then leveled off at a time when most were continuing to grow rapidly. However, a group of Illinois cities to the west and southwest had a similar experience.

14. Terre Haute stands alone, relatively far from other large cities. This means it is quite independent as a trade and service center. It also means it is not in a general area of heavily concentrated economic activity. It differs from all other Indiana cities in that it has not become a part of the region with a complex nexus of heavy metals industries—the substance of Indiana's industrial prowess. Now (May, 1951) announcement of construction of a factory for Allis-Chalmers indicates that this situation may begin to change.

15. It would appear that by 1920 the city of Terre Haute had reached a virtual size limit as a city based on its activities, such as trade, transportation and utilities, coal mining and manufacturing. Many of its manufacturing firms (food, beverage and chemical industries, e.g.), using mainly agricultural raw materials, had probably reached "maturity," in the economic sense. Further growth probably requires new investment in other industries for which the Area is now, or is becoming, a more desirable location. It is certain that the city faces powerful competition for such industry from the larger, still rapidly growing metropolitan areas of the Midwest.

16. It is to Terre Haute's advantage if the other communities in the Area can attract desirable industries. Similarly, the smaller communities should share in the benefits to Terre Haute of desirable industries which locate in the central city.

SETTLEMENT AND EARLY ECONOMIC GROWTH

As was stated in the introductory chapter, it is necessary that some historical background for the Area be given. However, an effort will be made in this section to treat the historical materials with a light brush, and to integrate to some extent the economic development and population growth—in reality they are both dynamic forces which have played upon one another. The history is a story of what the residents, with their energy and culture, have accomplished in their efforts to get a better living from the resources at hand, and the story of how the increased capital investments from the products of human effort have made possible a growing population. The historical notes are suggestive of the major influences at work in the Area, and are focused primarily on the larger comunities. Several of the other sections of the report will provide pertinent historical information.

The territory herein referred to as the Terre Haute Area is part of the region opened to settlement, with more or less personal security to the settlers from attacks by the remaining Indians, by the exploits of George Rogers Clark and the defeat of the British in the War of 1812, and then by the ensuing series of treaties with the Indians which finally removed them from competition with the whites for this land. A part of southern Sullivan County was occupied during the earlier periods of French and English control—a northern extension of the Vincennes district. Political organization was concentrated mostly in the period 1815-1825. There were about 8,000 people in the Area by 1820, and the rate of growth was quite rapid in succeeding years. Historians assert that most of the early settlers in and around the city of Terre Haute were from the northern states, but a sizable minority was from the south—e.g., Kentucky, Virginia and North Carolina. However, it is evident that many if not most of the early settlements in the other parts of the Area were made by persons who came from states to the south and southeast of Indiana.[2]

The early economic development of the Area was encouraged by the presence of the Wabash River. Many early settlers came by boat. More important was the development of river transportation as a means of moving local products to markets at New Orleans and elsewhere. After the early years, when business consisted mostly of trading with the Indians and then the early settlers, the most important activity besides farming centered around constructing flatboats and keel boats from the lumber produced locally, filling them with grain, and selling the boat (for its value as lumber) and grain at downstream markets.

The pork-packing industry also had early beginnings, and was of first-rate importance from about 1835 to 1860. The pork products were loaded on river boats and shipped to New Orleans, at a handsome profit. It is said that many of the early fortunes were accumulated by the pork packers. This industry was widespread in the Wabash Valley; in addition to Terre Haute, Clinton (Vermillion County) and Montezuma (Parke) were leading centers. The Civil War stopped shipments to New Orleans, and changes in the transportation medium and the greater locational advantages (including favorable freight rates) of such centers as Chicago and Kansas City led to the virtual elimination of the packing industry as a regional competitor.

---

[2] See the various county histories listed in the bibliography. However, as pointed out by Carl C. Taylor et al in *Rural Life in the United States*, p. 23, these persons who came out of Kentucky, Tennessee, western Virginia and North Carolina were to a large extent offspring of earlier Pennsylvania settlers who moved into the southern uplands. The background was not plantation life but small, independent, nonslave-owning farmers.

The old National Road (now U. S. No. 40) was one of the important factors in bringing wealth and population to Indiana, and was one of the main reasons for the early preeminence of Terre Haute. It reached Vigo County in the middle 1830's. The Wabash-Erie Canal reached Terre Haute in 1849, but it was of little value or economic importance to the Area at any time during its existence. It was closed in 1874.

No doubt the pattern of railroad construction during the 1850's and 1860's clinched Terre Haute's position as the chief city of central-western Indiana. The stakes were high, and property owners in Terre Haute were successful in their promotional efforts. Perhaps the relative locational position of the city (see Chapter II) made it probable that the system of railroads which developed would be almost inevitable once this form of transportation developed. However, it has just been pointed out that rail transportation did put Terre Haute in a weaker competitive position (relative to other developing industrial centers in the Midwest) for shipping meat and other agricultural products than it had been in the days of water-borne transportation. Thus, there were some disagreeable short-run effects.

Industrial Progress

The various early settlements in the Terre Haute Area, like all frontiers communities, had their grist mills, saw mills, cooperage makers, and other necessary small manufactures and service industries. The local forests and farm lands were the basis for most of this rather widespread industry. Milling, especially making of hominy, became of far more than local importance to Terre Haute soon after the Civil War; by 1880, the city ranked fifth in the nation in "flouring and grist-mill products."

The making of clay products in the Area dates from a small-scale beginning in the 1820's, and has been a significant factor in the economy for almost a century. Practically every community had a brick yard in the early days to provide the common red brick, but the manufacture of stoneware and later fire brick, various tiles, etc. became significant industries of more than local importance. Pottery and stoneware products were first made in the early 1840's at Bloomingdale and Annapolis in Parke County. However, the larger investments in the clay industries (brick and tile products) were eventually made at Brazil and West Terre Haute, where clays and shales underlying the coal seams were and still are extensively used.

Some coal was mined for home use in the early days of settlement. Later, small tonnages were shipped downstream to New Orleans. With the coming of the railroads, larger quantities were transported to various places in the Middle West, and the railroads used vast quantities of coal for power. Figures from the Ninth Census (1870) show that Clay County was the leader in coal production at that time—about 240,000 tons annually. Vigo produced less than 35,000. However, Vigo County soon came to the fore, and has ranked high among Indiana counties during the last 75 years. Sullivan County surpassed Vigo for some years early in the present century. It is said that Terre Haute's industrial growth was delayed by the discovery of natural gas in the Marion-Muncie area in the late 1880's.[3] However, coal came into its own as an industrial fuel as the natural gas supply failed at the turn of the century. By that time coal was second to agricultural products among the under-pinnings of the Area's economy.

Oil was struck in Terre Haute in the 1860's, in connection with well drilling. Another strike within the city in 1889 was more substantial. Later other sizable fields were opened up in Sullivan County and Vigo County. Quite significant strikes had been made to the southwest, in Clark and Crawford counties (Illinois).

The third quarter of the nineteenth century witnessed several efforts to establish an iron industry in the Terre Haute Area. Already by 1840 there are said to have been two or three small iron furnaces in the Area, using charcoal for fuel. Several furnaces using local coal and a mixture of local, Missouri and Lake Superior ores were fired in the period 1865-1870. The main concentrations were in the Brazil-Knightsville-Harmony area and near Clinton and Terre Haute. They had all fizzled out by 1895, but they did provide considerable economic growth during their brief existence.

Thus, during the 1860's and 1870's rather substantial industrial activity was under way in diverse fields. Terre Haute itself seemed to be well on the road to becoming the "Pittsburg" of the West; boom psychology was rampant. According to one directory, the community had, by 1890, three iron companies, a railroad car manufacturer, and two foundries employing a total of approximately 1,500 men. Other industries included a distillery, reported to be the largest of its type in the U. S. (according to the 1880 census, the city ranked fifth in the nation in production of distilled liquors), a brewery, a farm implement manufacturer, the Vandalia (later Pennsylvania) Railroad shops, a carriage and buggy manufacturer, an electric light and power company, a shirt factory, a boiler works, a steamboat manufacturer, a lumber mill and several mines. There were also seventeen labor unions and four railway labor organizations with headquarters in the city in 1893, creating job opportunities for more persons.

---

[3] Oakey, Charles C., *Greater Terre Haute and Vigo County*, p. 231.

Educational Institutions

Another source of growth in the main city in the Area, Terre Haute, was the creation and expansion of three institutions of higher learning. St. Mary-of-the-Woods, a Catholic school for the higher education of women, had humble beginnings in 1840. Rose Polytechnic Institute, an endowed engineering college for men, was founded by a wealthy Terre Haute industrialist, Chauncey Rose, in 1874. Both of these institutions have had modest enrollments, but have been valuable assets to the Area.

Indiana State Teachers' College was organized about 1870. It soon became a relatively large institution for one its type, with an enrollment of about 1,500 by the turn of the century. It has been one of the main assets of the community over the years, bringing in purchasing power and energy from the outside and creating various cultural by-products for the community.

Population Changes Accompanying Industrial Growth

As industrial development continued, the local population inevitably grew, filling the labor requirements of the basic industries and at the same time providing new job opportunities in the trade and service field. The land was settled and the accompanying mechanical service trades of a pioneer area were developed soon after that part of the state was "opened." It appears that during the early period the economy was less self-sufficient than would be popularly supposed, because there was a substantial export of products of the forest and farms, bringing in money from the outside and leading to the early development of an experienced merchant class. All in all, this provided a basis for Terre Haute, in particular, and for other river towns to grow more quickly than more self-contained areas did.

The Terre Haute Area had about 33,000 people in 1830, climbed to almost 255,000 in 1920, and has had fewer residents in each succeeding census, the latest (1950) giving a preliminary figure of 228,419. Figure P-1 shows the population changes of the counties in the Terre Haute Area from 1830 to 1950 and a comparative growth curve for Indiana. The vertical scale is logarithmic, so that equal slopes of the lines denote equal percentage changes from one period to another.

In 1830 Parke County was the most populous; this county, somewhat larger than Vigo and Vermillion, had a thriving agriculture and also some busy towns on the Wabash and its tributaries, where boats were built and loaded with farm products. Clay was farther back from the River, and its development was retarded. Parke County still had more people than Vigo in 1840, but Vigo had moved into a position to quickly assume first rank. The Area as a whole grew at almost the same rate as the state from 1830 to 1840, but fell sharply behind in 1840-50. It must be remembered that much of northern Indiana was just opening up to settlement at this time. Parke and Vermillion appear to have reached a maximum population as areas based mainly on agriculture in the 1840-60 period. (Parke had only 700 more people in 1950 than in 1850.) Vermillion has a unique curve, in that it grew very slowly for more than a half century, then spurted at the turn of the century as coal mining and small industries created a much wider economic base. The city of Clinton more than doubled from 1900 to 1910, and more than tripled between 1900 and 1920. Unfortunately for the local citizens it was almost back to its 1910 size in 1950.

On the basis of strong growth trends in the counties other than Parke and Vermillion, the Area experienced a higher percentage increase between 1850 and 1880 than the State of Indiana—the growth trend lines are closer together in 1880 than in 1850. From 1880 to 1890 several counties, including Vigo, began to falter. With the growth of coal mining and the coming of some new manufactures in the 1890's, the curve for Vigo again rose more steeply. Clay County, on the basis of clay products, iron furnaces and coal, made a strong bid for a higher population rank up to 1900, but then saw its job opportunities begin to shrink. Interestingly enough, Parke, Edgar and Clark counties also reached their peaks in 1900; they were (are) agricultural counties whereas Clay was basically industrial. Probably because of the oil boom in addition to coal, Sullivan spurted from 1890 to 1910, and then began to lose population. Vigo and Vermillion both reached peaks in 1920, but Vigo held about stationary for two decades and moved ahead again in 1940-50 while Vermillion continually faced large adjustments downward.

Looking at the growth curves (Figure P-1) more generally, these things stand out: 1) except for Vigo County, all others had a somewhat similar experience —growth until 1900-10, then decline. In the face of technological changes in agriculture, mining, etc. they could not provide new jobs to replace those jobs lost; 2) Vigo County, because of the increasing industrial investment in Terre Haute, stepped out from among its neighbors and has consistently widened the gap between its size and that of adjoining counties. This does not mean that further widening is inevitable, but powerful forces have been operating to create the present situation; 3) the Terre Haute Area was growing in

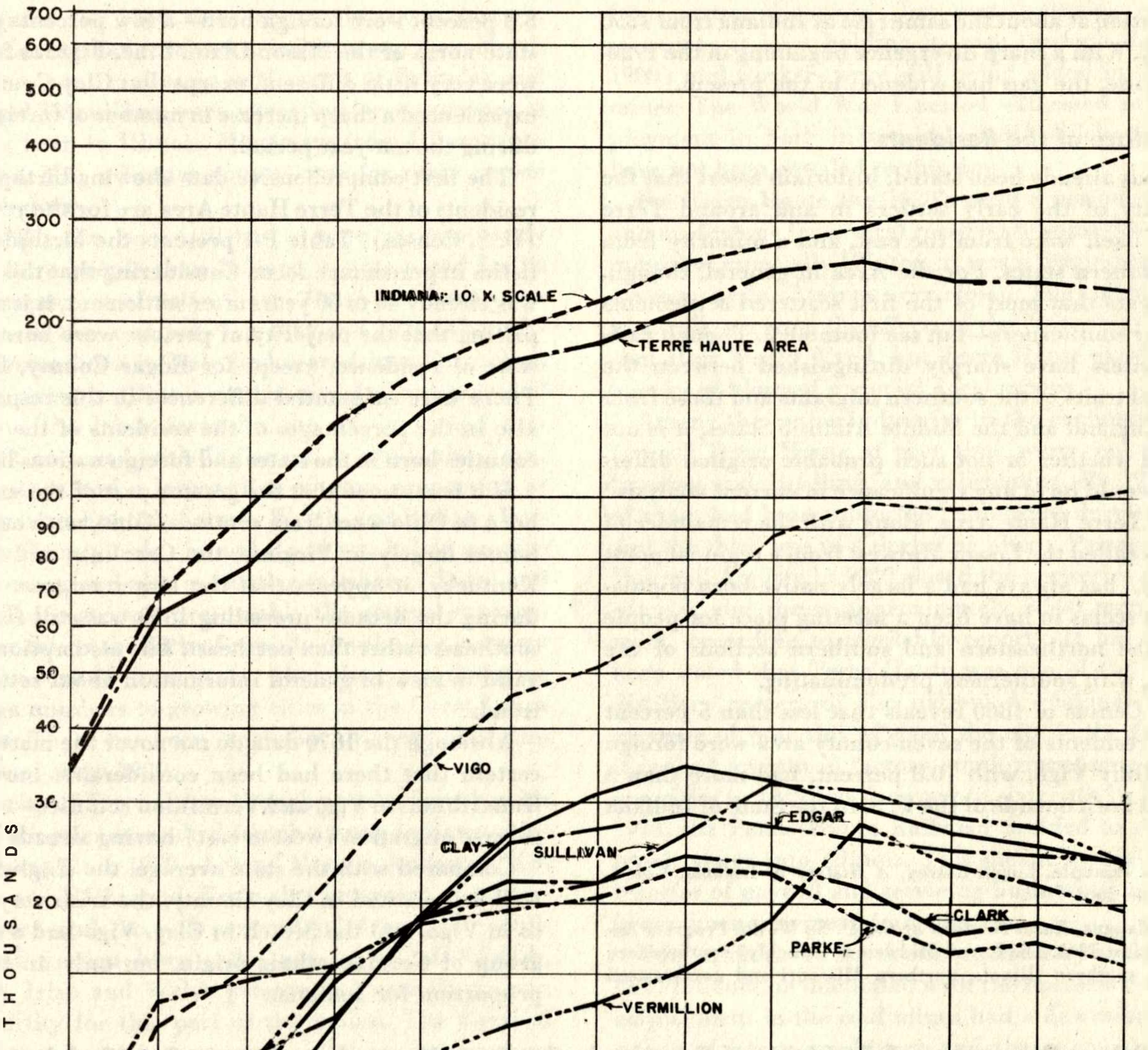


FIG. P-1

POPULATION GROWTH OF COUNTIES IN THE TERRE HAUTE AREA COMPARED WITH INDIANA population at about the same rate as Indiana from 1850 to 1920. With a sharp divergence beginning in the 1920-30 decade, the gap has widened to the present.

Birthplace of the Residents

As has already been stated, historians assert that the majority of the early settlers in and around Terre Haute itself were from the east, and a minority from the southern states. For the Area in general, though, it appears that most of the first scattered settlements were by southerners—but see footnote 2. Though various writers have sharply distinguished between the cultural traits of the southern migrants and those from New England and the Middle Atlantic States, it is not certain whether or not such probable original differences would be of any significance in current analysis.[4]

The Terre Haute Area, along with the remainder of what is called the Lower Midwest from a regional point of view,[5] has always had a largely native-born population. It seems to have been a meeting place for people from the northeastern and southern sections of the nation, with southerners predominating.

The Census of 1860 reveals that less than 5 percent of the residents of the seven-county area were foreign born. Only Vigo, with 10.8 percent, had more than 5 percent born outside of the U. S. In the State of Indiana 8.8 percent were foreign born—a low percentage for a state north of the Mason-Dixon Line. Figures for 1870 were very little different, except that Clay County had experienced a sharp increase in number of foreign born during the ten-year period.

The first comprehensive data showing birthplace of residents of the Terre Haute Area are for the year 1870 (U. S. Census). Table P-1 presents the birthplace statistics in percentage form. Considering that this period was already 40 to 50 years after settlement, it is not surprising that the majority of persons were born in the state of residence, except for Edgar County, Illinois. There were substantial differences in this respect and also in the percentages of the residents of the various counties born in the states and foreign nations listed.

If it is assumed that the greater part of the migrants born in Ohio were from southern Ohio, with ancestral homes largely in Virginia, the Carolinas and (later) Kentucky, it appears that the larger migrant stream during the decades preceding 1870 was still from the southeast rather than northeast. The assumption seems valid in view of general information about settlement trends.

Although the 1870 data do not cover the matter, it is certain that there had been considerable movement from Illinois to Vigo and Vermillion counties—a sort of reverse migration (west to east) having already begun.

Compared with the state average, the English were well represented in Clay County, the Irish very much so in Vigo, and the Scotch in Clay. Vigo had a sizable group of German ethnic origin, but only an average proportion for Indiana.

Table P-1.—Percentage of Residents of Counties in the Terre Haute Area Born in Specified States and Foreign Countries: 1870

BIRTHPLACE	CLAY	PARKE	SULLIVAN	VERMILLION	VIGO	CLARK	EDGAR	INDIANA
Native Born:								
Indiana	57.4	70.7	75.2	66.1	57.6	13.5	13.4	62.4
Illinois	NI	NI	NI	NI	NI	52.0	49.9	NI
Ohio	15.0	6.4	6.2	9.9	8.8	15.0	13.7	11.3
Kentucky	4.9	6.9	7.2	3.3	4.9	3.9	7.6	4.6
Pennsylvania	4.4	1.3	0.9	1.7	2.7	2.5	2.8	3.4
Virginia and West Virginia	1.7	3.6	1.7	3.2	2.3	NI	NI	1.9
New York	0.8	0.8	0.7	1.3	1.9	1.0	1.0	1.8
Other States	6.4	8.8	6.6	12.3	10.8	7.2	8.4	6.2
Foreign Born:								
England and Wales	2.8	0.4	0.6	0.4	1.0	0.4	0.4	0.6
Ireland	1.8	0.6	0.3	0.9	4.1	1.6	1.5	1.7
Scotland	1.5	0.1	0.1	0.0	0.2	0.1	0.1	0.1
Germany	2.4	0.1	0.4	0.6	4.7	2.2	0.9	4.6
Other Foreign	0.9	0.3	0.1	0.3	1.0	0.6	0.3	1.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NI—No Information.

Source: Ninth Census of the U. S., *Statistics of Population*, Table VII.

---

[4] See, for example, Logan Esarey, *A History of Indiana*, Vol. 1, various sections.

[5] A. R. Mangus, *Rural Regions of the U. S.*, Works Progress Administration, 1940. The Lower Midwest is (roughly) southwestern Indiana, southern Illinois, northern Missouri and northeastern Kansas.

Statistics for 1880 show about the same picture. Parke County had received a sizable group from North Carolina (source of early settlements of Friends) and Vigo and Vermillion were attracting large numbers of persons born in Illinois. Movement from Illinois into Sullivan, also a border county, was for some reason much lighter.

By 1920, the Area still had a more predominately native-born people than Indiana, a state noted for its high proportion of native born. There had been some changes in the Area between 1880 and 1920. About 1,500 persons born in Italy had moved into Vermillion County, into the Clinton community. Italians provided much of the labor force for the newly-opened coal mines. Compared with Indiana as a whole the Terre Haute Area had a larger than average proportion of foreign-born English, Scotch, Welch, and Italian (Vermillion County only) persons, and was below average in Germans, and also in relative number of Poles and other Slavic groups. Presumably the general explanation for this is the lack of rapidly developing industry after the turn of the century, when these peoples came in large numbers to growing cities in the Great Lakes Region. There has been no change or trend of an unusual sort since 1920.

The city of Terre Haute, though peopled largely with native Americans, ranked fourth among Indiana cities in this respect in 1920—behind Muncie, Anderson, Kokomo, and Richmond. From the viewpoint of its foreign born and "second generation" Americans (children of foreign born), the proportion of English, Scotch, Irish and Welsh persons in Terre Haute was noteworthy for this part of the nation. The German group was almost as numerous as all these put together, but still Terre Haute was among the cities with the lowest proportion of immigrants from Germany. It attracted relatively few Austrians, Hungarians, Russians and Poles.

DEVELOPMENTS FROM THE TURN OF THE CENTURY TO WORLD WAR II

From the available historical and statistical data, it appears that the Terre Haute community and the rest of the Area were in a healthy economic condition, with suitable work opportunities for an expanding population, as the twentieth century began. The population curves above (Figure P-1) suggest that job opportunities began to decline in several of the counties after 1900. They continued to increase in Terre Haute for another twenty years, or thereabout, before serious dislocations appeared.

Although there were local fluctuations in employment in the factories and the coal mines, it appears from scattered sources that manufacturing employment was at least holding its own through the early 1900's and workers were still being added in the coal mines. The World War I period witnessed peak employment in both industries, peaks which probably have not been equaled to this day.

For Terre Haute the 1920's were a period of crisis and misfortune for several reasons; to some other communities, especially Clinton, it was a tragic period because many local mines were closed. The entire nation was suffering from the effects of the "inventory" recession after World War I, but Terre Haute experienced a series of blows of a special, local nature.

Among the major industries in the economic structure of Terre Haute at that time were coal mining, brewing and distilling, and railroading. By 1923, two of these had been subjected to unusual developments and the third was in a declining phase. Passage of the Volstead Act late in 1920 closed the breweries and distilleries and threw approximately 3,500 men out of work, according to available reports. It has already been stated that Terre Haute was one of the leading distillery centers of the nation. A reasonably good measure of how this affected the city is the fact that it ranked seventh in factory employment among Indiana cities in 1919 but dropped to sixteenth in 1925. In 1923, the Pennsylvania Railroad decided to move its repair shops into Illinois. This meant a considerable transfer of payroll and servicing businesses, as well as heavy unemployment immediately.

Coal mining was the declining industry at this time. Coal production fluctuated with the business cycle, but employment in the coal mines had a downward trend as use of heavy machinery and the open-cut mining method progressed. Coal production in the five Indiana counties included in the Area is estimated at 18,693,000 tons in 1918, 9,703,000 in 1922, up to 16,391,000 tons in 1923, then downward to about 8,000,000 tons in 1929, one of the most prosperous years in the nation's history.[6] The depression low was less than 3 million tons.

These shocks necessarily had serious consequences for property values and community welfare. Local histories report a heavy out-migration of persons between 1920 and about 1925. The 1920-30 population decline in Terre Haute was about 3,300. Real estate values plummeted and relief needs increased.

Clinton, in Vermillion County, received an even greater jolt considering its size than Terre Haute after 1919. Its population loss amounted to about 3,000 (roughly 28 percent) between 1920 and 1930. Clinton

---

[6] It is asserted that competition with non-union mines of Kentucky and West Virginia and unfavorable freight rates were largely responsible for this decline during the 1920's. See *Fortune*, Vol. XIX, No. 5 (May 1939), p. 78.

Township lost 5,000. It can be understood that property values and the income to support community services declined to tragic lows. The non-mining population developed various explanations for the closing of local mines, including the widespread idea that the unions (United Mine Workers) had, by their demands, virtually driven the owners to close down. However, many thoughtful local persons suspected that it had became uneconomic to operate many of the local mines. The cleavages which centered around this question added to the distress. Several of the smaller communities throughout the coal-mining area were also seriously hurt during the 1920's, but Clinton's situation appears to have been unparalleled.

Even though conditions in Terre Haute are said to have improved in the last half of the 1920's, partly due to the activities of the Terre Haute Foundation (a local industrial development foundation to secure new industry), the city was still suffering from serious unemployment in 1930. Of the larger cities, Terre Haute and South Bend had the highest rate of unemployment, about 8.2 percent among the male workers and 3.2 percent among female workers.[7] However, most of the other cities had almost as great an incidence of joblessness, and the statewide figures were 5.3 percent for males and 3.1 percent for females. Unemployment was actually more severe in that part of Vigo County outside of the city of Terre Haute. With about 16 percent of all its labor force out of a job and looking for work, Vermillion County had by far the highest rate of unemployment of any county in the state, and Sullivan, Clay and Vigo were among the most distressed. The other three counties, largely rural and not dependent upon coal mining, were not experiencing much unemployment when the 1930 census was taken.

The Thirties

Because the residents of the city of Terre Haute and the coal-mining areas had, figuratively speaking, tightened their belts during the previous decade, it is asserted that they did not receive as great a jolt from the depression as residents of many other parts of the state. Terre Haute was fortunate in having a widely diversified economic base. Its manufactures have been mostly in foods and chemicals, groups not so severly hit during the depression as the durable goods industries which predominate in all the other large cities in Indiana. Ending prohibition helped local manufacturing and the city advanced from sixteenth position in the state in 1925 to tenth position in value of manufactures by 1935. The smaller coal-mining communities and those heavily dependent upon demand for construction materials such as clay products were clearly among those places in Indiana most in need of public assistance during the greater part of the 1930's.

The year 1935 was a momentous one for Terre Haute because of the so-called "general strike." There had been considerable strike activity and feeling was running high—a common situation in the nation during a time of intolerable lack of constructive use of human energies. The working people in the community, and others who identified themselves with these groups, carried out a general-strike threat. This received attention far and wide because of the dramatic elements in the story.

Leaders among local organizations soon came to recognize the folly of the actions taken. Fortunately, the sequel as far as labor relations are concerned was a period of no further serious labor trouble locally for several years, and, as suggested on the basis of a somewhat hasty review of outstanding labor disputes in recent years, a relatively insignificant amount of labor strife leading to use of the strike weapon to this day.[8] (The local coal mines close down when others throughout the nation do.)

Employment and Population Developments Preceding World War II

It has already been shown that parts of the Terre Haute Area experienced extraordinary declines in employment right after World War I and were still in tragic circumstances when most of the state was witnessing some of its best peace-time years. Except in the better agricultural areas and some of the farm service-centers, unemployment was still unusually severe in the spring of 1940, before the defense program had made much headway. Official welfare reports show that about 35 percent of the people in Vigo County were receiving relief of some kind in the 1938-39 period; unofficial figures quoted by Clinton business leaders are to the effect that 70 percent of their people were getting some type of assistance at that time. The 1940 census showed that 27.9 percent of the labor force in the five Indiana counties was unemployed, double the rate for Indiana and the U. S. About 15½ percent of the people in these five counties were on public emergency work (W.P.A., N.Y.A., etc.), compared with a figure of 5½ percent for Indiana. This situation was the worst in Vermillion County and the best in Parke.[9]

A few employment statistics for the five Indiana

---

[7] Fifteenth Census, "Unemployment Bulletin—Indiana."

[8] Perhaps of basic importance are the general recovery and boom conditions in the economy and the fact that changes in wage patterns for the nation are being set, more or less, by the negotiations in the steel and automobile industries. With few exceptions (e.g., coal) the big strikes have had their locus in the centers where these are produced.

[9] This paragraph and the succeeding one draw heavily on the Employment Security Division's report on the five-county area, cited above.

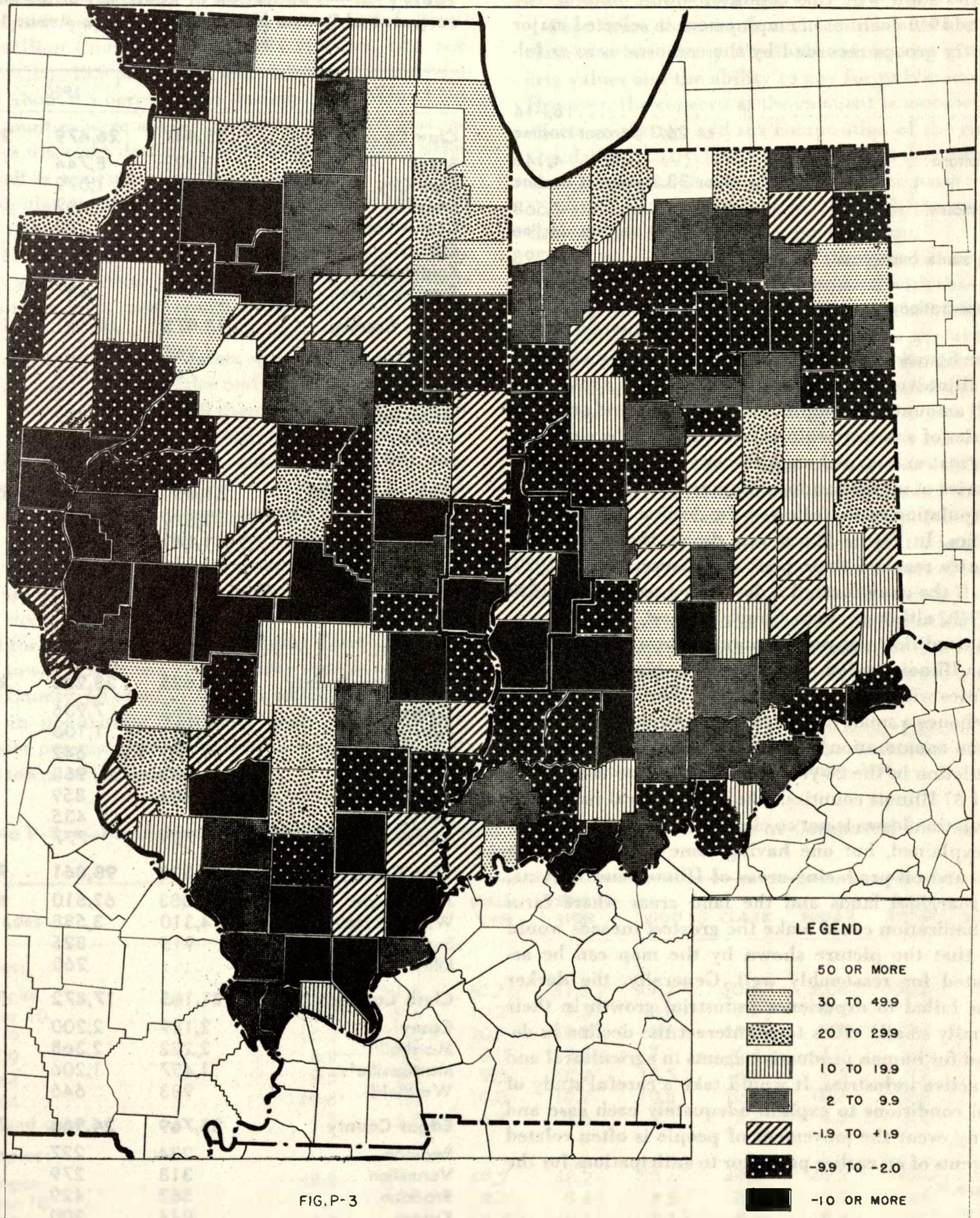


FIG. P-3

PERCENTAGE CHANGE IN POPULATION, TERRE HAUTE AREA, INDIANA AND ILLINOIS, BY COUNTIES, 1920-1940

SOURCE: U.S. CENSUS

INDIANA ECONOMIC COUNCIL 1950

counties show why this condition would obtain. The 1930 to 1940 declines in employment in selected major industry groups recorded by the censuses were as follows:

Total	18,714	or 26.3 percent decline
Agriculture	4,146	or 33.3 percent decline
Coal mines	7,568	or 63.3 percent decline
Clay, stone and glass	2,298	or 73.7 percent decline
Transportation, communication and utilities	1,020	or 17.6 percent decline

These figures exceed the statewide declines in all cases. The Illinois counties, Edgar and Clark, had a relatively small amount of unemployment—mining and other industries of a nonagricultural sort had not developed to any great extent, although the city of Paris had some factories of more than local importance.

Population losses followed the decline in job opportunities. In Figure P-1 it was shown that five of the counties reached their peak population before 1920, but all the counties had a downward trend from 1920 to 1940, although Vigo County almost held its own. This condition was not uncommon throughout the Indiana-Illinois region, as Figure P-3 shows. Excluding counties with a gain or loss of less than 2 percent (on the chance a small loss or gain may be due to errors in census enumeration), 35 of 78 Indiana counties lost population in the 20-year period. This was the case in 44 of 87 Illinois counties. The geographical pattern of population losses is not so clear-cut that it can be readily explained, but one having some familiarity with coal- and oil-producing areas of Illinois and Indiana, the marginal lands and the land areas where farm mechanization could make the greatest inroads would feel that the picture shown by the map can be accounted for reasonably well. Generally, the darker areas failed to experience industrial growth in their (usually small) cities to counteract the decline in demand for human productive agents in agricultural and extractive industries. It would take a careful study of local conditions to explain adequately each case and in any event the movement of people is often related to events of an earlier period or to anticipations for the future.[10]

Table P-2.—Population of Counties, Cities and Incorporated Towns in the Terre Haute Area: 1920, 1930, and 1940

AREA	1920	1930	1940
Clay County	**29,447**	**26,479**	**25,365**
Brazil[1]	9,293	8,744	8,126
Clay City	1,226	1,079	1,117
Staunton	642	482	387
Center Point	371	372	332
Carbon	572	476	510
Knightsville	767	704	677
Bowling Green	273	257	219
Parke County	**18,875**	**16,561**	**17,358**
Rockville	1,968	1,832	2,208
Rosedale	741	675	712
Bloomingdale	479	412	432
Montezuma	1,178	1,292	1,366
Judson	163	111	124
Marshall	334	293	321
Sullivan County	**31,630**	**28,133**	**27,014**
Dugger	1,679	1,383	1,406
Farmersburg	1,141	993	1,005
Shelburn	1,814	1,548	1,606
Merom	503	397	499
Carlisle	973	852	874
Sullivan[1]	4,489	5,306	5,077
Hymera	1,599	1,152	1,298
Vermillion County	**27,625**	**23,238**	**21,787**
Clinton[1]	10,962	7,936	7,092
Fairview Park	1,301	1,106	1,074
Universal	1,570	642	603
Cayuga	933	968	1,126
Dana	884	859	845
Perrysville	....	435	451
Newport	703	777	795
Vigo County	**100,212**	**98,861**	**99,709**
Terre Haute[1]	66,083	62,810	62,693
W. Terre Haute[1]	4,310	3,588	3,729
Seelyville	915	825	807
Riley	....	260	287
Clark County	**21,165**	**17,872**	**18,842**
Casey[1]	2,189	2,200	2,543
Marshall[1]	2,222	2,368	2,758
Martinsville[1]	1,437	1,206	1,296
Westfield	933	646	678
Edgar County	**25,769**	**24,966**	**24,430**
Redman	234	227	226
Vermillion	318	279	312
Brockton	562	429	449
Kansas	944	900	875
Paris[1]	7,985	8,781	9,281
Chrisman[1]	1,101	1,092	1,112
Hume	609	585	489
Metcalf	509	401	328

[1] Denotes city form of government.

Source: Decennial Censuses, *Population*, Vol. I.

---

[10] A precise comparison of employment changes in secondary industries (manufacturing and mining) and population changes within the 1920-40 period for all Indiana and Illinois counties revealed that the immediate relationship was not as close as was anticipated. Adjustments toward an equilibrium condition may move slowly. For example, in 1920 South Bend clearly had a small population in relation to its newly-acquired factory jobs. It has grown rapidly since then as the servicing industries developed in relation to local requirements.

Among the counties in the Terre Haute Area the changes in population (all declines) were as follows: Vermillion County, 21.1 percent; Sullivan, 14.6 percent; Clay, 13.9 percent; Parke, 8.0 percent; and Vigo only about 0.5 percent. The declines in Clark and Edgar counties were about 11.0 percent and 5.4 percent. There was some decline in nonagricultural population as well as agricutural in these counties.

Population changes from 1920 to 1940 in the cities and villages of each county in the Area are shown in Table P-2. Inspection of the figures reveals that there were gains in some communities and losses in others within the Area, even though every county lost in population during the twenty years. Universal, a coal-mining community near Clinton, dropped from 1,570 inhabitants to 603. All cities and towns in Clay County had fewer persons in 1940 than in 1920, and the same was true of all places in Sullivan County except the county seat and main trade center, Sullivan. The communities throughout these two counties are probably the most directly dependent upon extractive industries. The sizable farm-service towns in Parke, Vermillion, Clark and Edgar made some growth, but those dependent upon coal, clay or (in a minor way) petroleum industries generally declined in numbers of people. Except for a township or two adjoining Terre Haute and two townships in the rich farming section of Vermillion County, all other unincorporated parts of the Area lost in population. The rural losses were generally greater percentage-wise than the average for the cities and towns in the locality.

Migration and Composition of the Population

Population losses such as those indicated above are certain to have many effects on community life, property values and the ability to pay for public services.[11] However, the concern at the moment is more with the effects on the age and sex composition of the resident population. Analysis of the more recent decennial censuses gives a rough notion as to what the nature of the migration patterns have been, although the available data are sketchy for such an investigation.

The age-sex composition of the population of the Area in 1930, by counties, is compared with that of the State of Indiana in Table P-3. That is the earliest period for which comprehensive statistics are available for counties. Figure P-4 compares the distribution for the Area and Indiana, using a more detailed age classification.

Both Indiana and the Area had a few more males than females in 1930. There was a distinct difference between the relative numbers in each age and sex group in the two areas and this pattern was practically the same for each sex. Figure P-4 shows that a larger proportion of all Indianians were under 5 years of ago; the age groups 5-9, 10-14, and 15-19 for each sex were a larger proportion of the total in the Area than in the state; the state had relatively as many or more persons in the succeeding age groups up to 45 years of age; and

---

[11] See the results of a study by Victor Roterus, "Effects of Population Growth and Non-Growth on the Well-Being of Cities," *American Sociological Review*, February, 1946.

Table P-3.—Percent of Population in Specified Ages, by Sex, Counties in Area as Compared with Indiana: 1930

AGES	CLAY	PARKE	SULLIVAN	VERMILLION	VIGO	CLARK	EDGAR	AREA TOTAL	INDIANA
Males:									
All ages	51.1	51.5	50.7	51.5	49.2	50.4	50.4	50.2	50.6
Under 10	9.9	9.5	10.2	9.5	8.7	8.7	9.4	9.2	9.4
10-19	10.2	10.0	10.7	10.8	8.8	10.0	9.2	9.5	9.0
20-29	6.9	6.4	6.0	6.7	7.1	6.4	7.3	6.9	7.9
30-44	9.2	9.2	9.5	10.2	10.5	8.8	9.5	9.9	10.7
45-64	10.6	11.0	10.0	10.7	10.8	10.8	10.7	10.7	10.0
65 and over	4.3	5.4	4.3	3.6	3.3	5.7	4.3	4.0	3.6
Females:									
All ages	48.9	48.7	49.2	48.2	50.6	49.4	49.3	49.6	49.2
Under 10	8.7	8.9	9.7	9.4	8.5	8.8	9.3	8.9	9.1
10-19	9.3	9.2	9.7	10.1	9.1	9.1	8.5	9.2	8.9
20-29	7.0	6.3	6.7	7.0	8.2	6.4	7.3	7.4	7.9
30-44	9.9	9.2	9.9	9.9	11.0	9.6	9.6	10.2	10.4
45-64	9.8	10.6	9.5	8.8	10.3	10.7	10.3	10.1	9.4
65 and over	4.2	4.5	3.7	3.0	3.5	4.8	4.3	3.8	3.5
Total[1]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Totals vary slightly from 100.0 due to rounding off individual items.

Source: Adapted from Fifteenth Census, *Population*, Vol. II.

the Area had proportionately more persons in older age groups.

For the most part, these differences were due to differential birth rates and to migration. The birth rates in the Area were below those for Indiana in the 1925-30 period.[12] One of the interesting findings of A. R. Mangus' study (op.cit.) was that the Lower Midwest Region in general had a relatively low birth rate during that period. The Area, as compared with all of Indiana, had a smaller proportion of people in the younger adult years, no doubt because many young people had left the Area to seek work. The deficiency in these two age groups was balanced by a larger proportion in two dependent age groups: older persons and those of school age. The 1920 census shows that the Area had more children under 7 years of age per 1,000 women aged 18 to 44 than the state, indicating that fertility was greater in the Area at that time. That, at least, would explain the larger proportion of persons of school age in the Area than in Indiana in 1930.[13]

A glance at Table P-3 will show that this condition applied rather generally to all counties, but some variations may be noted. Considering the males, Vigo and Clark were notably below average in proportion of children under 10. Sullivan had the smallest proportion of young men (20-29)—way below the Indiana figure. Parke and Clark counties had unusually large numbers of elderly men. Vigo County had a larger proportion of women between the ages of 20 and 45 than the other counties or the whole of Indiana—which means that Terre Haute had been able to attract significant numbers of young women to fill the job openings in the city. The figures justify the conclusion that it had not been equally successful in providing work for the surplus young men in the surrounding towns and farm communities.

Tabulations by age and sex are available for cities such as Terre Haute in several censuses previous to 1930. As early as 1910 this city had shown a tendency to attract larger numbers of young women than young men from areas of lesser economic opportunity. This tendency has been due, no doubt, to the commercial-light industry economic base. All cities but a few of the centers of heavy industry have had this experience for some time. In the earlier decades the trek to the city appears to have started at approximately the time of completion of the common school education, whereas in recent years the move characteristically is later, often at the end of the high school training.

Migration trends for young people can be shown more reliably for the 1930-1940 period, using Census data for the two years and tables giving expected mortality between 1930 and 1940 among the persons residing in the Area in 1930—assuming they are barred from moving away. This gives a reasonable (but not logically or technically foolproof) estimate of the *net*

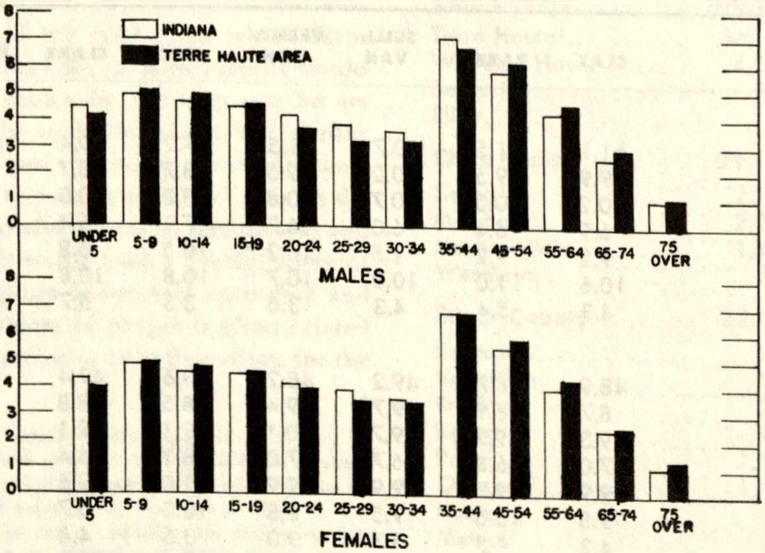


FIG. P-4. PERCENT OF TOTAL POPULATION IN EACH AGE AND SEX GROUP, TERRE HAUTE AREA COMPARED WITH INDIANA: 1930 movement, either into or out of the Area. Table P-4 shows the results of this procedure, applied to persons 5 to 24 years old in 1930, who aged ten years by 1940.

---

[12] Bulletin No. 12 of the Economic Council, *Indiana's Outlook*, gives fertility rates in Indiana as of 1925-30 and 1935-40. See pp. 30-31.

[13] Although conclusive data cannot be obtained, it would appear that somewhere between the 1920 period and the 1930 period birth rates in the Area declined, from a level above average for the state to below average. In view of the local "depression" in much of the Area during the 1920's such a change might have been predicted. However, out-migration of numbers of young women may have been the "cause" of the change as well as, or rather than, conscious limiting of fertility.

Inspection of the figures for the Area as a whole reveals that there was a net loss of both males and females in each of the age groups. For example, there would have been about 341 more males aged 15-19 in the Area in 1940 if all those aged 5-9 (except the few who would normally die) who lived in the Area in 1930 had remained. There was, of course, a more or less continual movement of persons in and out, so only *net* direction of movement is measurable. For both males and females, the largest amount of loss was among those 15-19 in 1930, and the next to greatest loss among persons 10-14 in 1930. The factors making for net movement outward appear to have operated rather strongly on young people until about age 30. Losses between 1930 and 1940 were small for the group aged 20-24 in 1930—a group which had already been decreased in size by previous losses of persons. Net male migrants from the Area totaled 5,086 and females 4,593. Among males in the age groups shown, out-migrants were about 20 percent of the 1930 resident population in Vermillion, Sullivan and Clay counties, and relatively fewer elsewhere. Vigo's loss of males was small in relation to the population (5½ percent). The figures for Edgar, Parke and Clark were about 14, 9 and 8 percent respectively. Except for Vigo (Terre Haute), the pattern and the magnitudes were almost the same for females. In other words the three counties (Clay, Sullivan and Vermillion) with large nonagricultural populations engaged in mining and other industries based on local resources were the largest losers.

Comparison of Vigo County and city of Terre Haute figures shows that practically all the net loss among males was in the rural part of the county. Terre Haute did, no doubt, lose many of its "local boys," but others came into the city in almost sufficient numbers to balance these losses.[14] Even in the 1930-40 period, Terre Haute was able to attract sizable numbers of girls and

---

[14] Persons who have worked in areas that have been losing numbers of their young people soon recognized that sentiments aroused by this process are strong motives behind industrial promotion.

Table P-4.—Estimated Net Number of Migrants from or to the Terre Haute Area, Selected Age Groups, by Counties: 1930 to 1940 (a minus sign [—] indicates net migration into area)

AREA AND AGE	ESTIMATED MIGRANTS	
	Males	Females
The Area		
5-9	341	463
10-14	2,020	1,444
15-19	2,291	1,822
20-24	434	864
Clay County		
5-9	83	68
10-14	313	265
15-19	430	363
20-24	120	145
Parke County		
5-9	—10	30
10-14	119	160
15-19	166	99
20-24	—3	25
Sullivan County		
5-9	69	—23
10-14	431	488
15-19	480	353
20-24	62	172
Vermillion County		
5-9	74	143
10-14	390	357
15-19	377	369
20-24	95	104
Vigo County		
5-9	74	—91
10-14	424	—26
15-19	440	375
20-24	38	287
City of Terre Haute		
5-9	35	—146
10-14	—54	—439
15-19	39	—26
20-24	28	329
Clark County		
5-9	33	—8
10-14	55	86
15-19	144	123
20-24	19	54
Edgar County		
5-9	118	144
10-14	189	113
15-19	237	140
20-24	103	76

Source: Based on 1930 and 1940 Censuses of Population and use of Tables 2 (males) and 3 (females) in *United States Life Tables and Actuarial Tables, 1939-41*, prepared by the Bureau of the Census. Mortality was probably slightly greater in the Terre Haute Area during the period 1930-40 than indicated by these tables. A more significant source of error is that inherent in census enumerations.

FIG. P-5 TERRE HAUTE AREA

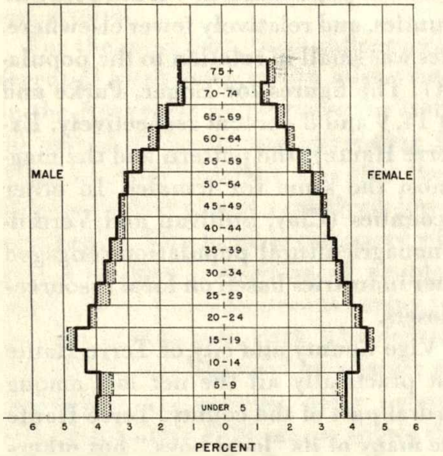


FIG. P-6 CLAY COUNTY

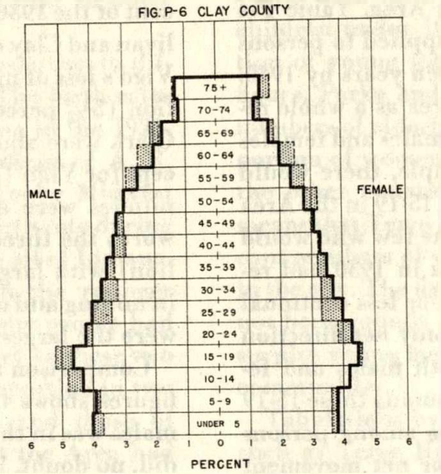


FIG. P-7 PARKE COUNTY

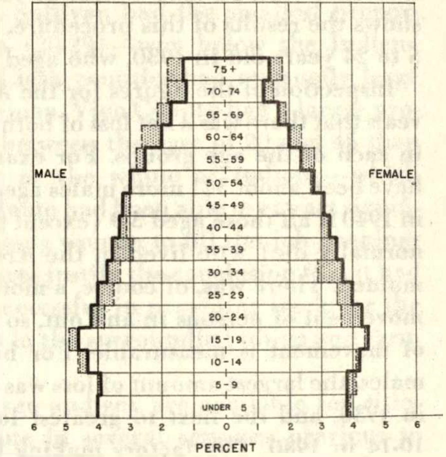


FIG. P-8 SULLIVAN COUNTY

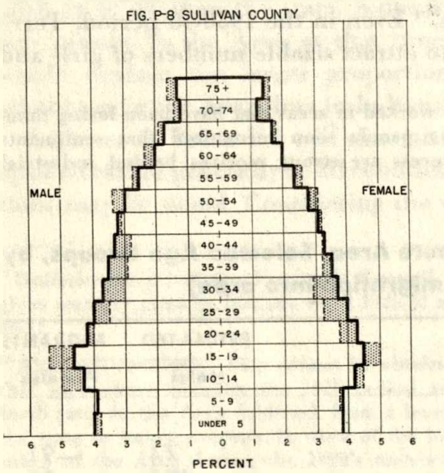


FIG. P-9 VERMILLION COUNTY

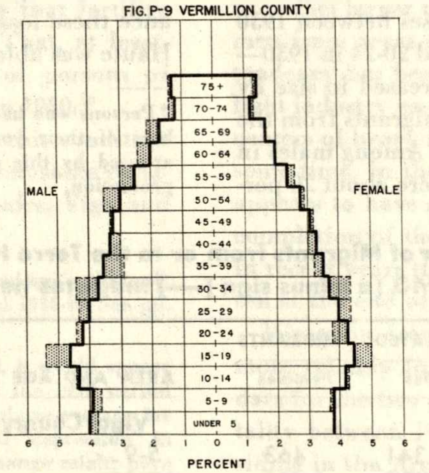


FIG. P-10 VIGO COUNTY

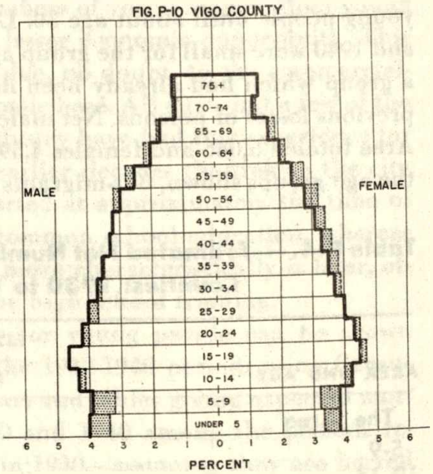


FIG. P-11 CLARK COUNTY

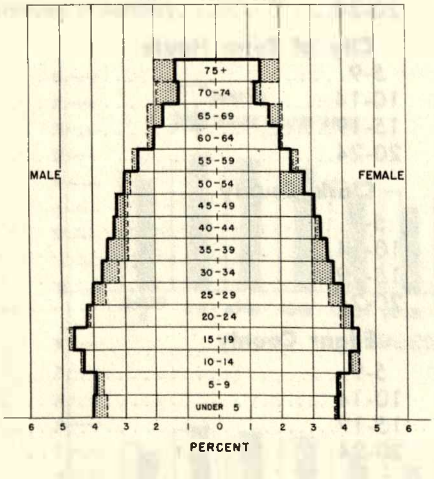
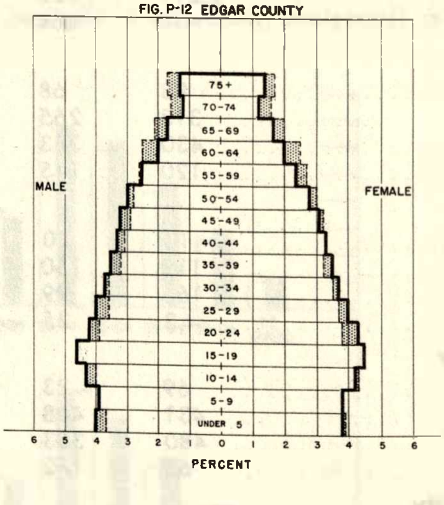


FIG. P-12 EDGAR COUNTY



POPULATION PYRAMIDS

TERRE HAUTE AREA COMPARED WITH INDIANA

—— DISTRIBUTION OF TOTAL INDIANA POPULATION

- - - - DISTRIBUTION OF COUNTY POPULATION

▨ PERCENTAGE DIFFERENCE

INDIANA ECONOMIC COUNCIL 1951

young women. For example, the age groups 10-14 in 1930 (20-24 in 1940) had been enlarged by about 439 persons due to migration. However, it is significant and interesting that the group 20-24 years of age had declined in numbers ten years later—out-migration estimated at 329 (net). The pattern is a familiar one to researchers; i.e., Terre Haute has been the first stopping place for young females, mostly from neighboring communities, who then work for some time as clerks, waitresses, factory operatives, etc. in the city. As they become older many either return to their localities (usually get married) or leave for cities where economic opportunities for persons with skills they have acquired are thought to be greater.

Statistics on age-sex composition are not available from the 1950 census to present a similar picture of more recent migration experience. If there had been no losses through out-migration, the counties would have gained in total population about 8-12 percent due to natural increase (births less deaths), but all the counties except Vigo lost rather heavily, more so than during 1930-40, and Vigo's increase between 1940 and 1950 was only about half as great as it would have been barring out-migration.[15] Thus, it is certain that heavy losses of young people were again experienced by the Terre Haute Area during the last decade.

A detailed picture of the age and sex composition of the population in the Area in 1940 is provided by a series of population pyramids (Figure P-5 to P-12). The counties, combined and separately, are compared with the State of Indiana (heavy line). The broken line traces the pyramid for the local area, and the dotted technique shows the difference—a lesser percentage for the local area if the dots are inside the heavy line and a greater percentage where the dots are outside this line.

As compared with the State of Indiana, the Area as a whole (Figure P-5) had relatively fewer infants and children (low birth rate); was "average" in the 10-14 group; had relatively more persons than Indiana in the 15-19 age group[16]; was below "average" in relative numbers of persons in the twenties to forties, especially in the case of males; and had decidedly more older people per hundred population than Indiana. In effect, the Area was carrying a relatively heavy burden of people beyond the most productive ages. The balancing deficiency was largely in the most productive age groups, but partly in infants.

The pyramids for most of the counties are similar. Clay County's somewhat exaggerates the tendencies for the Area; Parke had an "abnormal" number of old people and a marked deficiency in the 30-34 age group for females; Sullivan's pyramid, very irregular, has the 15-19 bulge to an extreme degree (see footnote 16); Vermillion, for some not easily explained reason, had relatively large numbers of men and women in several age groups under 35, a large proportion of older men but not older women—evidently reflecting a predominance of males among Italian immigrants of the early 1900's. Vigo, about average in proportion of adult males, had generally a larger than average proportion of females to balance a deficiency of children. Clark and Edgar fall into the more typical pattern for the Area, though more nearly approximating the Indiana distribution in the younger age groups. Clark was variable on the female side and had an exceptionally large number of old people per hundred population.

The population pyramid for Terre Haute (Figure P-13) shows a more extreme case of deficiency of children (low birth rate), a bulge on the female side from ages 20 upward, and a relatively "normal" proportion of males in the most productive ages.

WORLD WAR II AND THE PRESENT SCENE

Labor Market Developments Related to World War II

In the Employment Security Division's "Special Inquiry into Labor Market Conditions in the Terre Haute Area," a careful appraisal of trends and factors in employment (covering the five Indiana counties) is given, as follows:

> "The war production program led to a marked improvement in the area employment situation during the period from July 1942 to April 1943, but was not comparable in size or duration to the production program in many other areas. War production in the Terre Haute Area started late, in July 1942, did not achieve expected employment levels, and reached a peak in April 1943. War production employment in the later years of the war was not significant when compared to the total area labor force. Of more significance in the long run is the fact that war-born enterprises were confined to the ordnance industry and therefore provided almost no possibility of conversion to peacetime activities.
>
> "Construction work was started on two major wartime plants in July 1942, Vigo Ordnance and Wabash River Ordnance. A month later work was begun on the Terre Haute Ordnance Depot. In March

---

[15] These generalizations are based on state and local birth and death statistics provided by the Division of Public Health Statistics, State Board of Health. Actually, the figures show a low number of births relative to population in the Area as compared to the State of Indiana during 1940-50. The rather clear inference is that young adults left the Area in very large numbers.

[16] This seeming discrepancy can be accounted for partly by higher local birth rates about 15-20 years earlier, as noted above, but another factor is out-migration, which leaves a deficit for later ages and a relative bulge elsewhere to balance it.

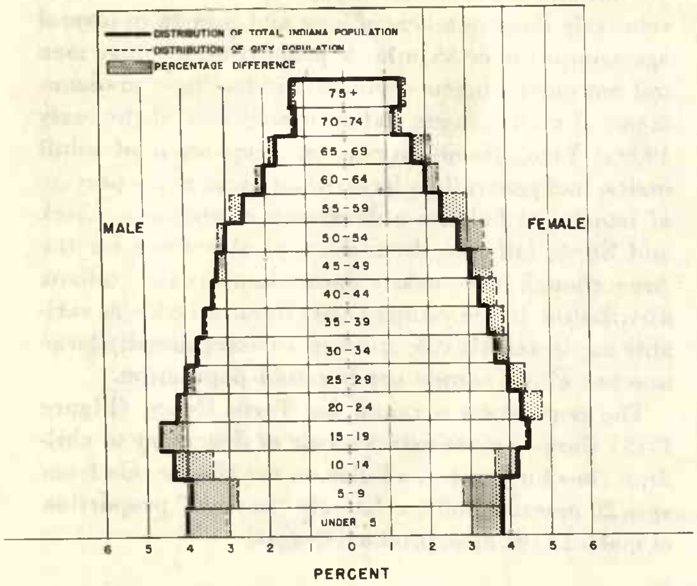


FIG. P-13

POPULATION PYRAMID

CITY OF TERRE HAUTE COMPARED WITH INDIANA

1943 construction of a second Wabash River Plant was begun. Construction employment for all three major projects was 2,988 in July 1942, reached a peak of 17,652 in November 1942, and declined to 5,719 by January 1943. From March 1943 to September 1943 war-plant construction employment remained within the 1,000-2,500 range, and was insignificant in the later war years.

"The three major war-born establishments, manufacturing ordnance and high explosives, began production operations late in 1942, reached a peak of almost 9,000 in April 1943, and declined to an employment level of approximately 3,000 by the last quarter of 1943. A slightly lower level was maintained throughout the duration of the War.

"During the period employment gains were achieved in other manufacturing establishments, including stone, clay and glass and iron and steel products, but the total gain by these firms was less than 1,000 for the period.

"From 1940 to 1943 the increasing demand for coal led to a 12.1 percent increase in mining employment, but mechanization and strip mining held the employment level to a total of 5,250 in April 1943. War-time activity resulted in somewhat increased employment in other industrial groups, including trade, transportation, communication and utilities. Agricultural employment declined approximately 10 percent for the period. Factors responsible included armed forces and war plant withdrawals, as well as the governmental use of approximately 55,000 acres of agricultural land. Strip mining also resulted in a further decrease in acreage available for agricutural use.

"The table below summarizes in terms of percentages the changes in employment in major industries from April 1940 to April 1943:

INDUSTRY	PERCENT CHANGE (—denotes decline)
Food and kindred products	4.9
Chemicals	604.8
Stone, clay and glass	162.2
Iron and steel	32.3
All other manufacturing	—16.4
Agricultural, forestry, fishing	—10.2
Mining	12.1
Construction	6.2
Transportation communication, utilities	9.1
Trade	14.2
Governmental	131.2
Other non-manufacturing	1.5

"During the same period it is estimated that 10,000 individuals migrated from the area chiefly to seek employment in war plants in various sections of the country. A heavy proportion of these out-migrants were in the younger age groups. The out-migration trend was most pronounced in the predominately rural and mining counties surrounding Vigo. Workers migrated to Indianapolis, Charlestown, Burns City and other war production centers in Indiana, as well as Chicago, Detroit and other mid-western cities. A significant number found employment in West Coast shipyards. During the latter half of 1942 a larger number of laborers and skilled construction workers entered the area for war-plant construction employment. Most of these immigrants departed to other areas early in 1943, though some remained to aid in staffing the operating war plants.

"Employment increased from 52,524 to 66,100 during the period, and unemployment declined from 20,307 in 1940 to approximately 3,000 in April 1943. . . . Approximately 4,500 workers migrated from the area.

"Developments Between Peak War Period and Current Period[17]

"Steady declines in war-plant employment, both construction and operation, were experienced from April 1943 to November 1943. Employment in the three major establishments decreased from 10,729 in April to 2,962 in November and remained at approximately the latter level for the duration of the war, and was insignificant thereafter. Total employment declined from 66,100 in April 1943 to 63,350 in July 1945, and increased to 64,650 in September 1946. Reconversion to civilian production, and the establishment of firms new to the area were the factors responsible for the recovery made in the latter year.

". . . Five new manufacturing establishments moved into the area during the 1943-1946 period. Their September 1946 employment level was approximately 1,200. Other new establishments, including non-manufacturing, are estimated to have doubled this new employment figure.

---

[17] Continuation of report cited.

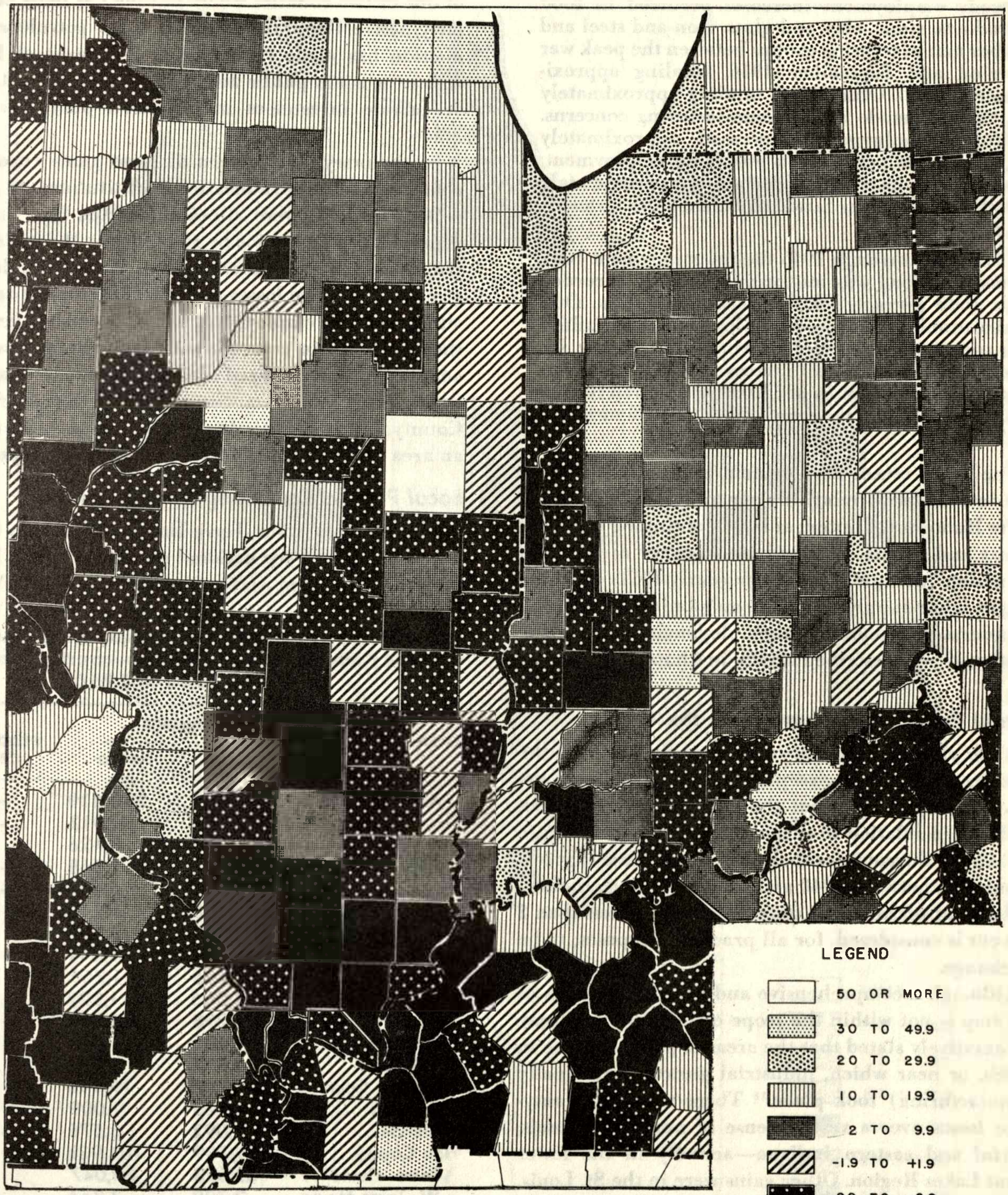


FIG. P-14

PERCENTAGE CHANGE IN POPULATION
TERRE HAUTE AREA, INDIANA AND ENVIRONS,
BY COUNTIES, 1940-1950

SOURCE: U.S. CENSUS

INDIANA ECONOMIC COUNCIL 1950

> "Steady employment increases occurred in food products, stone, clay and glass, iron and steel and other manufacturing groups between the peak war period and September 1946, totaling approximately 4,500. Other gains totaling approximately 1,000 were made in non-manufacturing concerns. Mining employment decreased approximately 1,000 for the period, and war plant employment, including construction, decreased approximately 10,000 so the gains failed to balance the losses by 5,500.
>
> "From 1943 through 1945 the unemployment compensation load was less or only slightly exceeded the state average per thousand population. Out-migration, non-covered employment, and failure to secure enough employment to be eligible for compensation were all factors. By 1946 the average number of claims per 1,000 population for the state was 20.1. The comparable Area figure was 25.3."

The more recent employment experience—decline late in 1948, with relatively severe unemployment at Terre Haute and Clinton, at least, continuing for about a year and a half, followed by recovery as the 1949 "recession" dissipated, and now (early 1951) reaching a tight labor supply in some communities but with a considerable amount of unemployment still existing in others—was described briefly in Chapter I.

Recent Population Changes in the Region

It has already been shown (Figure P-1) that all the counties in the Area except Vigo lost population between 1940 and 1950, but the changes have not been analyzed in relation to regional developments. Figure P-14 shows the counties that gained and those that lost population between 1940 and 1950 in Illinois, Indiana and part of surrounding states. A change of less than 2 percent is considered, for all practical purposes, to be no change.

Although a comprehensive and exacting analysis of the map is not within the scope of this report, it may be tentatively stated that the areas of gain are those in which, or near which, industrial growth (principally manufacturing) took place.[18] There were no county-wide losses over a vast expense of northern Illinois, central and eastern Indiana—actually in the lower Great Lakes Region. Other gains were in the St. Louis, Louisville and Cincinnati areas, around Evansville, the large Decatur-Peoria-Champaign area of central Illinois, Lexington in Kentucky, and several smaller areas of one or two counties where mining has been particularly active (Hopkinsville, Ky., e.g.), petroleum production has made strides (e.g., northwest of Evansville), or some public facility (ordnance plant, e.g.) or private investment in industrial plant has been made.

In summary, the pattern of large gains (except in counties with large educational institutions, to which college students were allocated for the first time) is generally accounted for by reference to the metropolitan centers and smaller special areas of industrial growth. The large losses are generally related to a decline in mining employment and to poor farm lands, or they occurred in counties with farm lands especially adaptable to mechanized agricultural and lacking non-agricultural industries. Some gain was made in Vigo County, but it is clear that it was a minor gain within an area of widespread decline in numbers of people.

Local Population Changes, 1940 to 1950

The counties in the Terre Haute Area began to lose population when the national defense program began, and no doubt there were periods during World War II

Table P-5.—Population Changes, Area Counties and the Communities of One Thousand or More Inhabitants: 1940 to 1950

AREA	NUMBER		PERCENTAGE CHANGE
	1940	1950[1]	
All Counties...	**234,505**	**228,419**	**—2.6**
Clay County......	25,365	23,912	—5.7
Brazil..........	8,126	8,426	3.7
Clay City.......	1,117	1,068	—4.4
Parke County......	17,358	15,647	—9.9
Montezuma.....	1,366	1,219	—10.8
Rockville........	2,208	2,459	11.4
Sullivan County....	27,014	23,641	—12.5
Dugger........	1,406	1,201	—14.6
Farmersburg....	1,005	1,022	1.7
Hymera.........	1,298	1,065	—18.0
Shelburn........	1,606	1,418	—11.7
Sullivan.........	5,077	5,430	7.0
Vermillion County..	21,787	19,448	—10.7
Cayuga.........	1,126	1,009	—10.4
Clinton.........	7,092	6,576	—7.3
Vigo County.......	99,709	104,931	5.2
Terre Haute....	62,693	64,047	2.2
W. Terre Haute.	3,729	3,356	—10.0
Clark County.....	18,842	17,238	—8.5
Casey.........	2,543	2,727	7.2
Marshall........	2,758	2,980	8.0
Martinsville.....	1,296	1,441	11.2
Edgar County.....	24,430	23,674	—3.1
Chrisman.......	1,112	1,101	—1.0
Paris...........	9,281	9,794	5.5

[1] Preliminary census figures.

Source: Census reports.

---

[18] Emphasis is put on "or near which" industrial growth took place. Other studies of the Council show that there was no gain in basic industry in many of the counties which gained population, but these counties are within commuting distance of the cities that grew industrially. See, for example, Miscellaneous Publications Nos. 3 and 5 of the Indiana Economic Council.

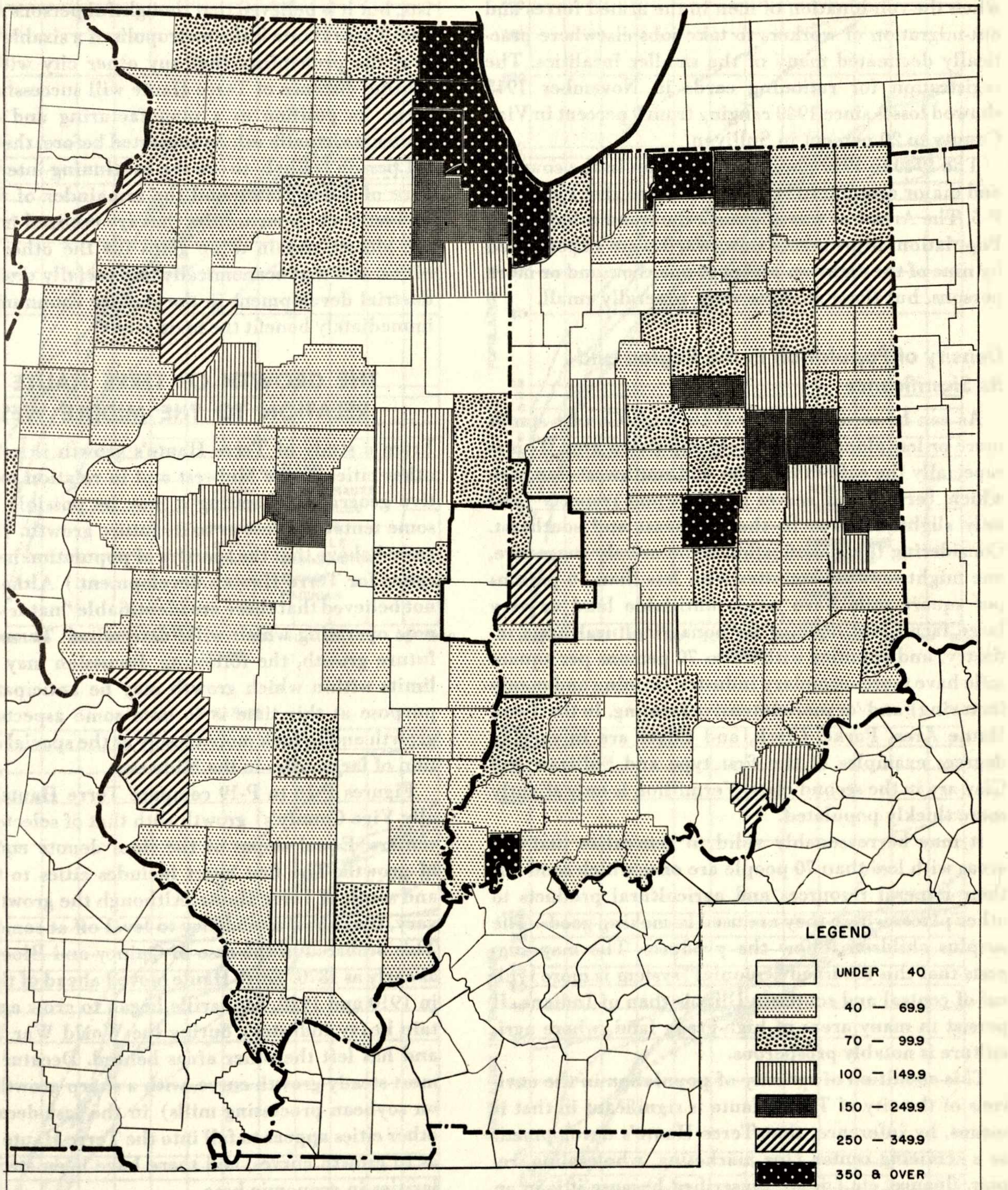


FIG. P-15

POPULATION DENSITY PER SQUARE MILE,
TERRE HAUTE AREA, INDIANA AND ILLINOIS,
BY COUNTIES, 1950

SOURCE: U.S. CENSUS

INDIANA ECONOMIC COUNCIL 1950

when the combination of men in the armed forces and out-migration of workers to take jobs elsewhere practically decimated many of the smaller localities. The registration for rationing cards in November 1943 showed losses since 1940 ranging from 9 percent in Vigo County to 20 percent in Sullivan.

The 1940 to 1950 population changes in the counties and major communities in the Area are given in Table P-5. The Area loss was about six thousand inhabitants. Population adjustments downward were experienced by nine of the eighteen places of one thousand or more persons, but these changes were generally small.

Density of Population in the Region and Its Significance

As can be seen in Figure P-15, Vigo County stands more or less alone in a sparsely populated area. This is especially the case to the west and southwest—an area which Terre Haute serves in important respects—and only slightly less so to the northeast and southeast. Considering the classification to be merely suggestive, one might say that counties with less than 40 persons per square mile have much untillable land or very large farms and little or no nonagricultural basic industry, and counties with 40 to 70 persons per square mile have more secondary industry (mining and manufacturing) and/or more intensive farming. In the Terre Haute Area, Parke, Clark, and Edger are in varying degrees examples of the first type and Sullivan and Clay are in the second class. Vermillion is only slightly more thickly populated.

It may be reasonably valid to generalize that the areas with less than 70 people are ones which send out their mineral resources and agricultural products to other places where they are used in making goods. The surplus children follow the products. The map suggests that this modified "colonial" system is more typical of central and southern Illinois than of Indiana. It persist in many areas of high-grade land, where agriculture is notably prosperous.

This condition of sparsity of population in the environs of the city of Terre Haute is significant in that it means, by inference, that Terre Haute's development as a servicing center (for marketing, wholesaling, repair, finance, etc.) is circumscribed because it is in an area with very modest nonagricultural investments or industrial facilities.

It is not asserted here or elsewhere that economic adjustments in the remainder of the Area will be determined by Terre Haute's attractiveness to industrialists, but it is believed that thoughtful persons recognize that Terre Haute is the metropolis of a sizable area and that the probability that any other city within commuting distance of Terre Haute will successfully challenge its position as a manufacturing and servicing center is virtually nil. As suggested before, the thoughtful person is likely to see the continuing inter-dependence of Terre Haute and the remainder of the Area, and see that opportunities that are realized in this city are almost certain to be gains for the other communities, and that economically and socially desirable industrial development in the smaller communities will immediately benefit the main city.[10]

THE GROWTH OF TERRE HAUTE IN RELATION TO THE MIDDLE WEST

From a study of Terre Haute's growth in relation to other cities in the Midwest and in relation to its relative geographical setting it may be possible to reach some tentative ideas as to its future growth. (It is suggested above that the sparsity of population has significance for Terre Haute's development.) Although it is not believed that there are identifiable "natural" forces now operating which will "determine" Terre Haute's future growth, the following discussion may indicate limits within which growth may be anticipated. The purpose at this time is to note some aspects of past growth and to look more closely at the spacial distribution of large cities in the Midwest.

Figures P-16 to P-19 compare Terre Haute's (actually Vigo County's) growth with that of selected urban centers. Equal slopes of the lines denote equal rates of growth. The first chart includes cities to the west and south of Terre Haute. Although the growth curves vary, they show a tendency to level off at some period. This occurred in the case of Quincy and Bloomington as early as 1870. Terre Haute moved ahead of the others in 1910 and 1920. Evansville began to grow again (obtain heavy industry) during the World War I period, and has left the other areas behind. Decatur has the most steady growth curve, with a sharp growth (based on soybean processing mills) in the last decade. The other cities appear to fall into the Terre Haute pattern, as to growth curves, and there have been strong similarities in economic base.

A second chart (Figure P-17) compares Terre Haute with cities to the east and northeast. Growth trends were considerably stronger in these urban centers. Anderson and Muncie were jolted temporarily in the early 1900's when natural gas supplies dwindled, and South Bend was checked temporarily by the depression.

Figure P-18 shows the growth curves for three large cities in the Midwest and for three smaller communi-

---

[10] The work of the local Chamber of Commerce is seen to reflect a recognition of this inter-dependence.

FIG. P-16

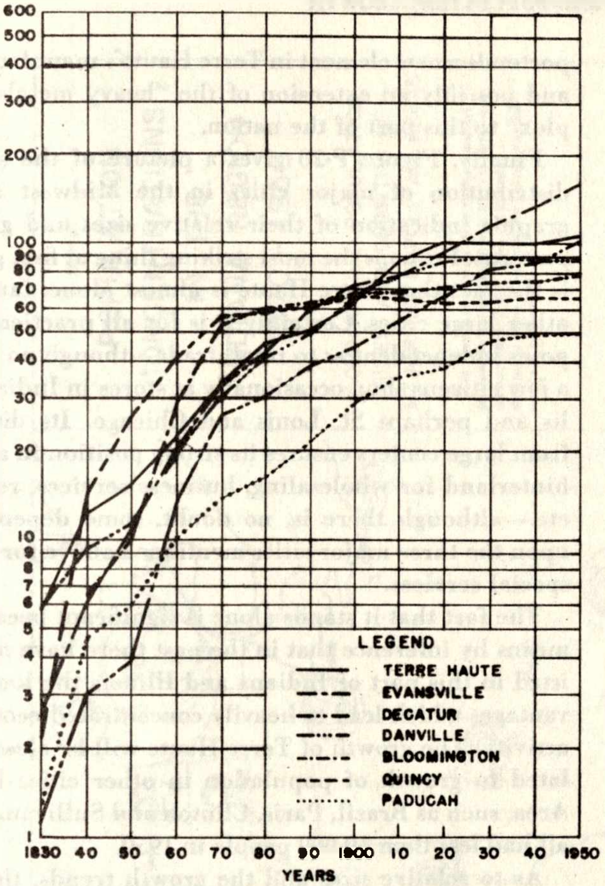


FIG. P-17

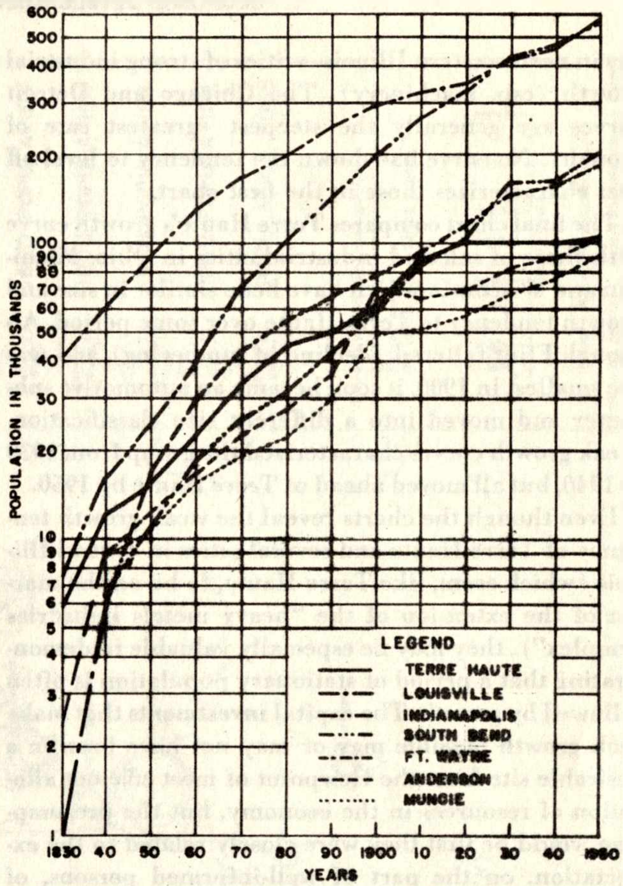


FIG. P-18

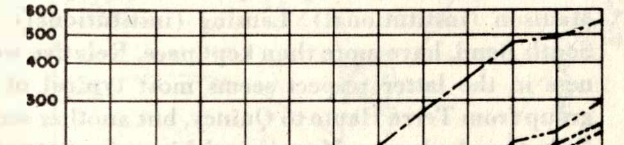
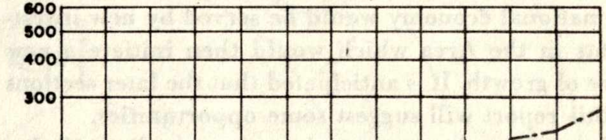


FIG. P-19



POPULATION GROWTH OF TERRE HAUTE (VIGO COUNTY) COMPARED WITH SELECTED AREAS

CHARTS SHOW POPULATION OF COUNTY OR COUNTIES IN METROPOLITAN AREA OF EACH CITY

SOURCE: U.S. CENSUS

INDIANA ECONOMIC COUNCIL 1955

ties in northwestern Illinois—cities of strong industrial growth (esp. machinery). The Chicago and Detroit curves are generally the steepest (greatest rate of growth). No curve has shown the tendency to level off that characterizes those in the first chart.

The final chart compares Terre Haute's growth curve with those of selected industrial cities in Ohio, Michigan and Wisconsin which have been similar in size and growth tendency to Terre Haute over some period. Although Flint faltered (decline in lumbering) and was the smallest in 1900, it soon became an automotive subcenter and moved into a different size classification. Weak growth curves characterized the group from 1930 to 1940, but all moved ahead of Terre Haute by 1950.

Even though the charts reveal the weak growth tendency of Terre Haute and several cities in central Illinois (which seem, like Terre Haute, to be on the margin of the extension of the "heavy metals industries complex"), they may be especially valuable in demonstrating that a period of stationary population is often followed by growth. The capital investments that make such growth possible may or may not have been in a desirable site from the viewpoint of most efficient allocation of resources in the economy, but the presumption would be that they were closely related to the expectation, on the part of well-informed persons, of profitable operations. If present-day conditions indicate that the Terre Haute Area has such opportunities, the national economy would be served by new investments in the Area which would then initiate a new wave of growth. It is anticipated that the later sections of this report will suggest some opportunities.

Terre Haute's economic base is very diversified—trade, transportation and utilities, coal mining and manufacturing in particular—but the dynamic influence is primarily manufacturing. The city's manufacturing has to a considerable extent revolved around use of agricultural raw materials to produce foods, beverages, paper products and chemicals. Due to considerations of costs of assembling these agricultural raw materials and of marketing, such factories generally reach a "mature" size in a particular locality.[20] It is possible that this consideration has been one of the most crucial in controlling Terre Haute's population growth. However, announcement is being made (May, 1951) of the construction of a plant for Allis-Chalmers (makers of farm machinery, etc. in peacetime). This evidently portends a new element in Terre Haute's manufactures, and possibly an extension of the "heavy metals complex" to this part of the nation.

Finally, Figure P-20 gives a picture of the spatial distribution of major cities in the Midwest and a graphic indication of their relative sizes and growth patterns. Perhaps the most striking thing at first glance is the fact that Terre Haute is almost alone, far from other large cities. Certainly it is for all practical purposes independent as to retail trade—though no doubt a few citizens shop occasionally at stores in Indianapolis and perhaps St. Louis and Chicago. Its distance from large centers ensures its strong position in a large hinterland for wholesaling, business services, repairs, etc.—although there is, no doubt, some dependence upon the three major cities mentioned above for many special services.[21]

The fact that it stands alone is significant because it means by inference that in the past there have not existed in this part of Indiana and Illinois the local advantages which lead to heavily concentrated economic activity. The growth of Terre Haute will be closely related to growth of population in other cities in the Area, such as Brazil, Paris, Clinton and Sullivan. They all had less than 10,000 people in 1950.

As to relative sizes and the growth trends, the size and strong growth of the large concentrations is most striking, but many of the smaller cities, e.g., Peoria, Madison (institutional), Lansing (institutional) and South Bend, have more than kept pace. Relative weakness in the latter respect seems most typical of the group from Terre Haute to Quincy, but another sector, including Anderson, Muncie and Lima, is also noticeable.

Future Population Growth

In view of the continuing powerful attractiveness to industry and people of the great metropolitan areas, it seems evident that only the favored few among smaller independent cities such as Terre Haute can hope to grow into a truly metropolitan center. Except for institutional cities, manufacturing would seem to be almost the sole basis for such growth—the large centers (e.g., Chicago, St. Louis, Indianapolis) have key positions in other sustaining functions. In the case of Terre Haute, the coal resource could conceivably be of even greater importance than it now is.

A statement by Warren S. Thompson in a foreword to the study by Dr. Bogue seems appropriate at this point. He wrote:[22]

> "The conclusion . . . that urban centers are now and probably will continue to be the major focal points of economic oranization and hence, determiners of the pattern of population distribution, seems to

---

[20] See P. Sargant Florence, *Investment, Location and Size of Plant*, Cambridge University Press, 1948.

[21] The work of Dr. Don J. Bogue, op.cit., gives significant findings on the typical relation of distance from large centers to the local development of functions—retail trade, wholesaling, service industries and manufacturing.

[22] *The Structure of the Metropolitan Community*, p. viii.

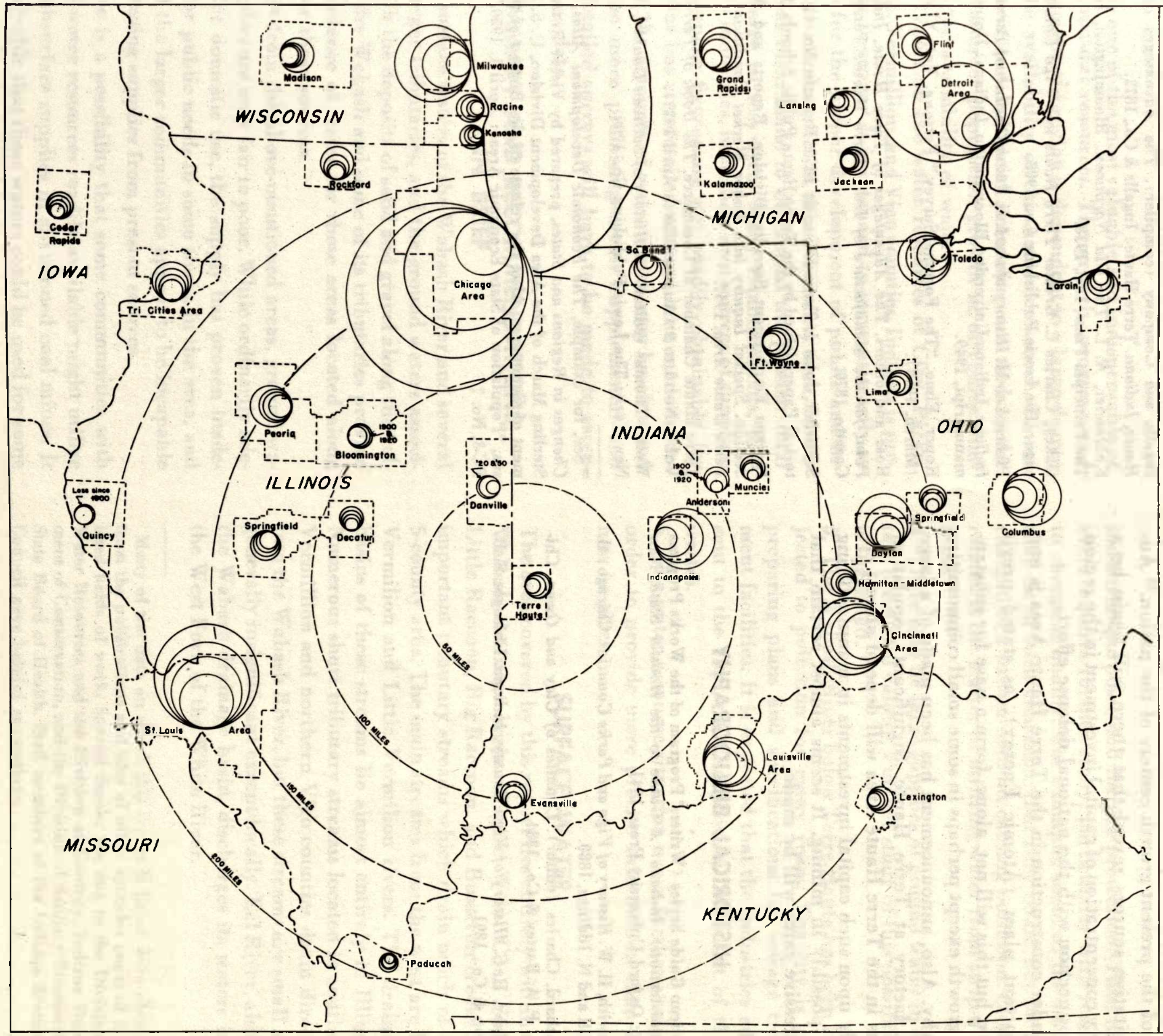


FIG. P-20

POPULATION CONCENTRATIONS IN THE INDIANA REGION 1870 - 1950

COMPARATIVE POPULATION SIZES AND GROWTHS OF MAJOR METROPOLITAN AREAS

The populations are those of the county or counties (enclosed by broken lines) of which the cities named are the main concentration. Shown are all Standard Metropolitan Areas in the region and a group of smaller centers of population.

Inner Circle	1870 POPULATION
Second Circle	1900 POPULATION
Third Circle	1920 POPULATION
Outer Circle	1950 POPULATION
Dotted Circle	POPULATION LOSS

Note: Area of circle indicates population.
Scale below shows diameters for circles of various populations.
One square inch = 500,000 people.

0 10,000 25,000 50,000 100,000 250,000 500,000 1,000,000 2,000,000 3,000,000 5,000,000 7,000,000
DIAMETER SCALE

SCALE OF MILES
0 10 20 40 60 80

SOURCE: U.S. CENSUS INDIANA ECONOMIC COUNCIL 1950 me undeniable. Thus all plans for the redistribution of population which fail to take account of that fact would seem to be doomed in advance. This does not mean, however, that the present type of big city and the present degree of "dominance" by big cities is inevitable. Economic necessity changes with the development of new techniques, and only metropolitan provincialism will deny that these new techniques may possibly have as much effect on the patterns of population distribution in the next several decades as the direct use of steam did during the 19th century."

Regionally, the Lower Great Lakes Region is clearly one of the present growth centers of the nation.[23] Authoritative sources reveal that there will again be a heavy concentration of capital investment in the region in connection with the national defense effort.

Under construction in the Terre Haute Area is one important plant (Atomic Energy), as stated previously, but this will not, alone, form a base for substantial growth except perhaps in some small communities nearby. Also, announcement has been made of a large new factory at Terre Haute. Significant population gains in the Terre Haute Area will depend almost entirely upon such capital investments in manufacturing and possibly in mining. It seems almost certain that impressive gains will be made.

HISTORICAL BIBLIOGRAPHY

American Guide Series (Writers' Program of the Works Progress Administration). *Indiana: A Guide to the Hoosier State.* New York: Oxford University Press, 1941.

Bechwith, H. W. *History of Vigo and Parke Counties.* Chicago: H. H. Hill and N. Iddings, 1880.

Blanchard, Charles (editor). *Counties of Clay and Owen.* Chicago: F. A. Battey & Co., 1884.

Brodsby, H. C. *History of Vigo County, Indiana.* Chicago: S. B. Nelson & Co., 1891.

Branson, George. "Archeological and Historical Survey of Parke County," *Indiana History Bulletin,* Vol. IV, Ex. No. 4, 1927.

Chamberlain, J. and Others (editors). "Oh the Moonlight's Fair Tonight Along the Wabash," *Fortune,* Vol. XIX, No. 5 (May, 1939).

Condit, Blackford. *The History of Early Terre Haute.* New York: A. S. Barnes and Co., 1900.

Esarey, Logan. *History of Indiana, Vol. III. An Account of Vigo County.* Dayton, Ohio: Dayton Historical Press, 1922.

Hassam, Loren. *Historical Sketch of Terre Haute, Indiana.* Terre Haute: L. M. Rose and Co., 1873.

History of Parke and Vermillion Counties. Indianapolis: B. F. Bowen & Co., 1913.

Ingalls and Company (compiler). *The Advantages of Terre Haute, Indiana.* Terre Haute: Ingalls & Co., 1872.

Kohlmeier, A. L. *The Old Northwest.* Bloomington, Indiana: The Principia Press, Inc., 1938.

Oakey, Charles C. *Greater Terre Haute and Vigo County.* Chicago: The Lewis Publishing Co., 1908.

Pfister, Leo M. *History of the J. B. Pfister Co., Inc. of Terre Haute, Indiana.* Indiana University, Bloomington, Indiana: Unpublished manuscript, 1949.

Roper, Elmo. "The Fortune Survey," *Fortune,* Vol. XLI, No. 3 (March, 1950).

Rose and others. *The Advantages of Terre Haute, Indiana as Point for the Manufacture of Iron.* Terre Haute: Terre Haute Gazette, 1870.

Schlicher, John J. *Terre Haute in 1850.* Bulletin No. 11 in Historical Papers issued by the Terre Haute Public Schools, 1917.

Indiana Employment Secruity Division, Reports and Analysis Section. *Special Inquiry into Labor Market Conditions in the Terre Haute Area.* 1947.

Terre Haute Chamber of Commerce. *The Book of Terre Haute.* Vol. I, Nos. 1 to 9 (August 1920 to April 1921).

Wolfe, Thomas (editor). *A History of Sullivan County, Indiana.* New York: The Lewis Publishing Co., 1909.

---

[23] See, for example, *The Economic Development Atlas, Recent Changes in Regions and States,* prepared by Victor Roterus and Sterling March of the Area Development Division, U. S. Department of Commerce. Also, the release of the Bureau of the Census, "Population of State Economic Areas: April 1, 1950," Series PC-3, No. 7.

Chapter IV

WATER RESOURCES

Preston McGrain

Indiana Flood Control and Water Resources Commission

Water is one of the most valuable and indispensable of all our natural resources. The growth, progress, and advancement of a region is dependent to a large degree upon the availability of this natural resource. Power generation and industrial processing are tied to the water resource; population growth is, of course, limited by the availability of water.

This report on the water resources of Clay, Parke, Sullivan, Vermillion, and Vigo counties, Indiana is preliminary in scope.[1] It is intended to serve primarily as a guide for the proper development of public and industrial water supplies in this five-county area. No attempt has been made to determine the present total water usage in this area. Many establishments, particularly industries, have their own sources of supplies, and pumpage figures are not readily obtainable for these. Nor has any detailed attempt been made to determine the amounts of water which may be obtained from the more promising areas. Supplemental and more detailed surveys will have to be made to ascertain these data.

SUMMARY AND RECOMMENDATIONS IN BRIEF

1. The surface waters of the Wabash River and several of its larger tributaries, and the ground waters associated with the deposits of sand and gravel along the valleys of the Wabash and some of its tributaries provide an abundance of water for those areas located along and near these sources.

2. Apart from the above-mentioned areas, ground water supplies are only fair to poor. While ordinarily adequate for domestic use, the supply has proven inadequate for public needs in some towns in the area, and some of the larger communities appear to be incapable of increasing supplies from present sources.

3. There is a possibility that some communities with limited water resources readily available might utilize large subsurface supplies in abandoned coal mines. It is conceivable that these waters could be used for some industrial purposes and for fire protection. This, however, requires further study, particularly with respect to chemical quality. For example, some of the waters may be of such character that they could not be discharged to a stream without causing pollution. Closely related is the matter of utilizing water from strip-mine lakes.

4. There may be large supplies of ground water in certain preglacial valleys. Further study of this possibility is suggested.

5. The Wabash River below Terre Haute has been subjected to pollution for many years. The city is now preparing plans and specifications for sewage treatment facilities. It is expected that the industries adjacent to the city will also provide treatment of their wastes.

6. The water resource situation needs further study in order to provide more precise information than can now be given.

SURFACE WATER

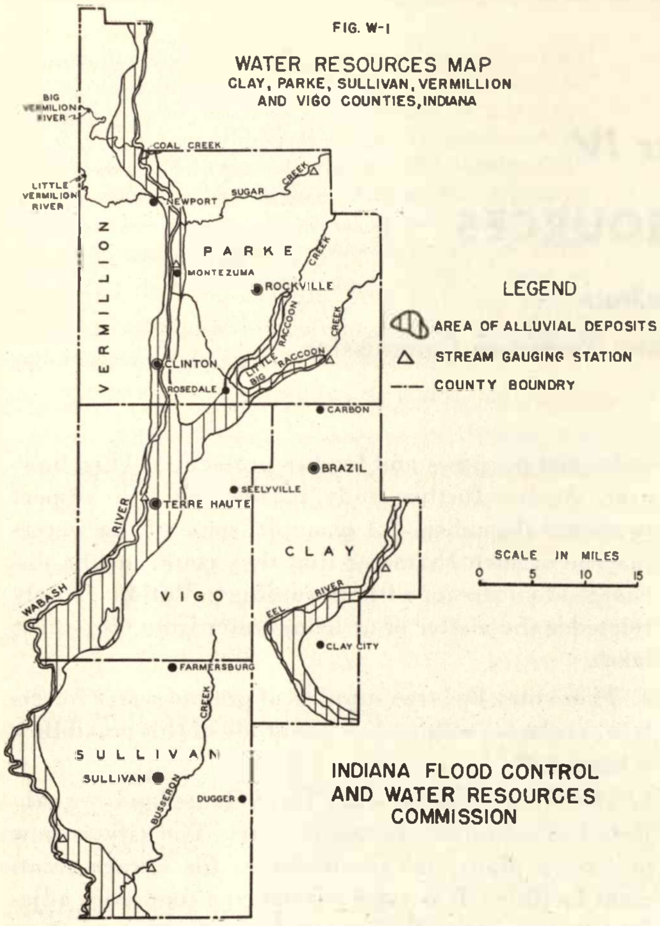
The area covered by this report lies entirely within the Wabash drainage basin (Figure W-1). Coal, Sugar, Little Raccoon, Big Raccoon, and Busseron creeks are important tributary streams which drain much of the 5-county area. The main streams from the west are Big Vermilion and Little Vermilion rivers. The drainage basins of these streams lie almost entirely in Illinois. Numerous short tributary streams located in southern Vermillion and northern Vigo counties drain directly into the Wabash River, but these streams are small and generally insignificant except locally. Eel River, also in the Wabash drainage basin, discharges its waters into the West Fork of the White River.

---

[1] Many of the data on which this report is based were obtained from the publications and files of other agencies engaged in related fields of work. Special thanks are due to the Division of Water Resources and the Division of Geology, Indiana Department of Conservation, and the Division of Sanitary Engineering, State Board of Health. Staff members of the Indiana Economic Council gave helpful suggestions.

FIG. W-1

WATER RESOURCES MAP
CLAY, PARKE, SULLIVAN, VERMILLION
AND VIGO COUNTIES, INDIANA



Although many other factors are important to the industrial user and the public water utility, it is certain that the amount of water flowing in the stream, mainly during the dry season, is crucial in considering the surface water resource. Table W-1 is for gaging stations in and immediately adjacent to this area. The discharge measurements are for varying periods, depending upon when the gaging stations were put into operation.[2]

The table reveals that the amount of water flowing in the Wabash River, even at minimum flow, is substantial, but the other streams carry relatively little water during the dry season. The minimum flow of 690 second-feet at Terre Haute amounts to about 446 million gallons per day. This figure may be compared with the maximum daily pumpage of water from the Wabash by the local water utility: about 8,000,000 gallons. In most years the minimum flow is substantially above 690 at Terre Haute; in 1946, a "normal" year, the lowest flow was 1,280 second-feet. These figures indicate, then, that there is an abundance of surface water along the Wabash, far beyond the present needs.

The Wabash River below Terre Haute has been subjected to pollution for many years. The city is now preparing plans and specifications for a sewage treatment works. It is expected that the industries adjacent to the city will also provide treatment of their wastes. Clinton, Rockville, Brazil and Sullivan have sewage treatment facilities.

As a result of the coal industry's operations, hundreds of strip-mine lakes have been formed in this area. None of the lakes is being used as a source for public water supply. However, many are being used as a source for industrial water supply. Coal-preparation plants are the largest users of water from such lakes. Many of the lakes are under private ownership, some owned by the original land owners who merely leased the mining rights, some by individuals who have pur-

---

[2] Several state agencies (working through the Division of Water Resources, Indiana Department of Conservation, in cooperation with the United States Geological Survey) contribute funds to help maintain gaging stations on most of the important streams in this area. These records are published in U. S. Geological Survey Water-Supply Papers or may be inspected in the Indianapolis offices of these agencies.

Table W-1.—Stream Flow Data for Specified Points in the Terre Haute Area

GAGING STATION	DRAINAGE AREA (sq. mi.)	PERIOD OF RECORD	MAXIMUM DISCHARGE (sec. ft.)[1]	MINIMUM DISCHARGE (sec. ft.)
Wabash River at Covington	8,230	1939-48	147,000	487
Wabash River at Montezuma	11,000	1927-48	184,000	560
Wabash River at Terre Haute	12,200	1927-48	189,000	690
Wabash River at Riverton	13,100	1939-48	201,000	858
Eel River at Bowling Green	832	1934-48	26,000	15
Sugar Creek near Byron	678	1940-48	28,700	12
Big Raccoon Creek at Mansfield	252	1939-48	17,800	1.0[2]
Busseron Creek near Carlisle	227	1943-48	5,500	0.3
Vermilion R. near Danville (Ill.)	1,280	1914-21 1928-48	48,700	1.9

[1] Sec.-ft. means one cubic foot or 7.48 gallons of water per second.
[2] Flow regulated.
Source: Data from U.S.G.S. Water-Supply Papers and unpublished data of the U.S.G.S.

chased them for home and camp sites, some by conservation clubs, veterans' organizations, Boy Scout troops, and the like. Municipalities and the State of Indiana (where the lakes exist in land taken over for the state forest system) have ownership of a few lakes.

It is the opinion of qualified persons that relatively few of the larger lakes created by coal stripping in this area have physical characteristics which would prevent their use for water supply or recreational purposes. However, there are some in which acidity, sulphates, hardness, etc., might prevent one or both uses. There is no industry-wide program for the development of these lakes because present liability laws make the owners subject to suit for any personal damages which occur on their property.

GROUND WATER

The best source of ground water in this region is the sands and gravels associated with the deeply filled valleys of the Wabash and Eel rivers (Figures W-1 and W-2). It would be hard to exaggerate the importance to the area of this excellent source. Many of the tributary streams in this region were blocked by glacial meltwaters flowing down the trunk streams and, as a result, became filled with silts and other fine-grained sediments. Occasionally sufficient water-bearing sands and gravels are present in the tributary valleys to provide limited supplies of water. Some of these latter valleys are used as sources of public water supplies, even though they are located some distance from the cities they serve.

The rock formations in Clay, Parke, Sullivan, Vermillion, and Vigo counties consist of clays, shales, coals, limestones, and sandstones. Of the rock formations, sandstones are the most widespread water-bearing formations (aquifers) in the area. However, these formations are not always reliable water-bearing horizons. Locally any one of the sandstones may yield a fair supply of water, but any particular formation cannot be considered as dependable. The clays and shales are not considered potential water-bearing formations. In most of the area the limestone formations are too thin to be important. However, in extreme eastern Clay and Parke counties Mississippian limestone formations may furnish fair water supplies for domestic and livestock purposes. Deeply buried limestone and standstone strata frequently produce mineralized waters. Ground waters are also found in joints and fractures of coal formations, but these are generally insignificant. The public water supply for Jasonville in nearby Greene County is reported to be from a well 10 inches in diameter, 90 feet deep, which penetrates an abandoned coal-mine workings of several hundred acres, in which an adequate quantity of water is impounded. This water, like all water associated with coal in Indiana, is mineralized.

Illinoian glacial drift in Sullivan, Clay, and Vigo counties is dominantly a clay till. Water supplies associated with pockets or lenses of sand and gravel in the till are of local importance only. The Wisconsin glacial drift in Parke and Vermillion contains more sand and gravel than the Illinoian drift to the south and, consequently, is a more reliable source of ground water. However, with few exceptions, these waters are used mostly for domestic and livestock purposes.

CONDITIONS COUNTY BY COUNTY

Clay County

The bedrock strata are mainly sandstones, shales, and coals of Pennsylvanian age. Where the sandstones persist, fair supplies of water for domestic and livestock purposes may be found.

Illinoian glacial drift caps the bedrock formations over most of Clay County. The glacial drift is generally a compact clay-till ranging in thickness from a few feet to 50 feet or more. Occasionally small lenses or pockets of sand or gravel are present near the base of the glacial material.

The best source of ground water in Clay County is from the sands and gravels in the valley of the Eel River. These deposits are up to 100 feet thick in the deepest part of the valley and are known to carry copious quantities of ground water. Clay City has located its wells in this valley. The Eel River, as noted in Table W-1, does carry considerable surface water which might be further utilized.

Brazil, the county seat and largest city in the county, obtains water from seven 8-inch wells with an average depth of 120 feet. The total yield from these wells has been estimated to be over 1,000,000 gallons per day. The supply to the wells is obtained by infiltration through gravel from reservoirs which were created by dredging several large gravel pits along an old creek bed. The water is treated with chlorine. The hardness in parts per million of calcium carbonate is 350. There is also one 36-inch, gravel-packed well, 28 feet deep, located in the east part of the city, which has an estimated capacity of 100,000 gallons per day. This latter well is used mainly during summer months when consumption is high. The estimated average daily pumpage of Brazil is 550,000 gallons, with a probable maximum daily pumpage approaching 1,000,000 gallons. Brazil is apparently consuming about all the water its system is capable of producing and will need additional supplies for municipal and industrial expansion. Pos-

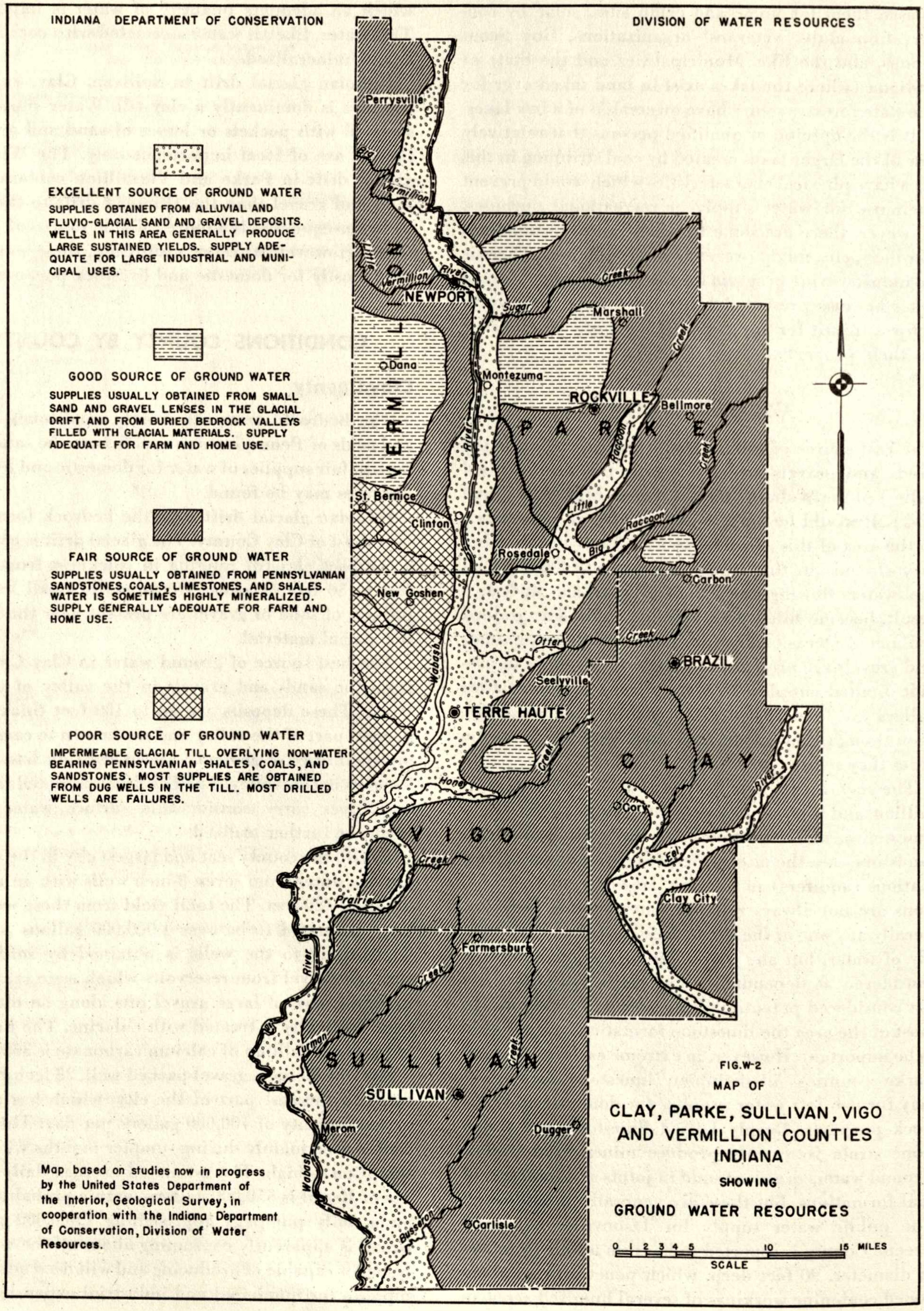

INDIANA DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES
EXCELLENT SOURCE OF GROUND WATER
SUPPLIES OBTAINED FROM ALLUVIAL AND FLUVIO-GLACIAL SAND AND GRAVEL DEPOSITS. WELLS IN THIS AREA GENERALLY PRODUCE LARGE SUSTAINED YIELDS. SUPPLY ADEQUATE FOR LARGE INDUSTRIAL AND MUNICIPAL USES.
GOOD SOURCE OF GROUND WATER
SUPPLIES USUALLY OBTAINED FROM SMALL SAND AND GRAVEL LENSES IN THE GLACIAL DRIFT AND FROM BURIED BEDROCK VALLEYS FILLED WITH GLACIAL MATERIALS. SUPPLY ADEQUATE FOR FARM AND HOME USE.
FAIR SOURCE OF GROUND WATER
SUPPLIES USUALLY OBTAINED FROM PENNSYLVANIAN SANDSTONES, COALS, LIMESTONES, AND SHALES. WATER IS SOMETIMES HIGHLY MINERALIZED. SUPPLY GENERALLY ADEQUATE FOR FARM AND HOME USE.
POOR SOURCE OF GROUND WATER
IMPERMEABLE GLACIAL TILL OVERLYING NON-WATER BEARING PENNSYLVANIAN SHALES, COALS, AND SANDSTONES. MOST SUPPLIES ARE OBTAINED FROM DUG WELLS IN THE TILL. MOST DRILLED WELLS ARE FAILURES.
VERMILLION
PARKE
VIGO
CLAY
SULLIVAN
Perrysville
Big Vermillion
Vermillion River
NEWPORT
Dana
Sugar Creek
Marshall
Creek
Montezuma
ROCKVILLE
Bellmore
St. Bernice
Clinton
Little Raccoon
Big Raccoon
Creek
Rosedale
Carbon
New Goshen
Otter Creek
BRAZIL
Seelyville
TERRE HAUTE
Honey Creek
Wabash
Cory
Eel River
Prairie Creek
Clay City
Farmersburg
Creek
Turman
River
Creek
Merom
Dugger
Busseron
Wabash
Carlisle
0 1 2 3 4 5 10 15 MILES
SCALE

FIG. W-2
MAP OF
CLAY, PARKE, SULLIVAN, VIGO AND VERMILLION COUNTIES INDIANA
SHOWING
GROUND WATER RESOURCES

Map based on studies now in progress by the United States Department of the Interior, Geological Survey, in cooperation with the Indiana Department of Conservation, Division of Water Resources.

sible sources of additional supplies are suggested in the next section of this chapter.

Parke County

Two periods of glaciation have been recognized in Parke County. The Illinoian drift is generally a thin, clayey till and is relatively unimportant, except locally, as a water-bearing horizon. The drift cover is generally thicker in the area of Wisconsin glaciation and is characterized by morainic ridges, some of which contain lenses or pockets of water-bearing sand and gravel.

The bedrock formations exposed, or present a short distance beneath the glacial drift, consist of limestone, sandstone, shale, and coal. The limestone formations in the extreme eastern part of the county and the sandstones over most of the county may produce fair supplies of ground water for domestic and livestock purposes but these horizons are not always reliable as the stone may be too compact to contain water. Ground water from deep wells is usually mineralized.

Water-bearing sands and gravels in the deeply filled Wabash River valley provide the most reliable sources of ground water in the county. Portions of the valleys of Big Raccoon and Little Raccoon creeks have been filled with glacial outwash material, but the extent and nature of this material has not been fully established. Big Raccoon Creek at one time occupied a channel that extended southwest past Rosedale toward Terre Haute. This channel is now filled and partially hidden from view. However, one would expect this former bed of Big Raccoon Creek to contain water-bearing sands and gravels in such quantities as to provide good supplies of ground water.

Rockville, the county seat and largest city in Parke County, obtains its water from two gravel-packed type wells 46 feet deep. The static water level of the wells varies from 5 feet to 20 feet in depth during normal seasons. During periods of drought the wells have been considerably lowered but supply has always been found adequate for ordinary consumption demands. The average consumption is estimated to be 110,000 gallons per day, with a probable maximum of 200,000 gallons per day. No treatment is employed. Total hardness is about 300 parts per million.

Montezuma, located on the Wabash River, obtains water from two drilled wells, 80 feet deep, in gravel. Total capacity of the wells has been estimated to be 500 gallons per minute. The wells are somewhat lowered in dry seasons but have always proved adequate for domestic consumption demands. The average consumption is estimated to be 30,000 gallons per day. The water is treated with chlorine. Total hardness is reported to be 320 parts per million.

Surface water, especially from the Wabash, is available in significant quantities. (Refer to Table W-1.)

Sullivan County

In bedrock formations and glacial geology Sullivan County is similar to Clay County, described above.

Water-bearing sands and gravels associated with the deeply alluviated and filled valley of Wabash River are the best sources of ground water in Sullivan County.

The valleys of Busseron and Turman creeks are also deeply filled but these deposits consist of calcareous silts and clays. Occasionally some sand or gravel representing a bar deposit is found in such valleys but generally these areas cannot be relied upon for public or industrial water supplies.

The city of Sullivan obtains its water from a dug well, 22 feet deep, located on the east bank of Wabash River near Merom, about 9 miles west of the city. The well is supplied by natural infiltration through coarse gravel and sand from the Wabash River. The average daily pumpage is about 590,000 gallons. The water is chlorinated. The hardness in parts per million of calcium carbonate is 305. The town of Shelburn is supplied with water by Sullivan.

Several of the small communities, Farmersburg and Hymera being typical examples, have had some difficulty securing sufficient supplies of water to meet their needs.

A buried Mississippian valley in Linton Township, Vigo County, near the Sullivan County line, was encountered during oil-drilling operations. This buried valley has a relief of 275 feet and is filled with a Pennsylvanian sandstone formation. Fresh water was encountered at 355 to 415 feet, which tested about 9 gallons per minute. This is not a large amount, but may indicate a potential source of a supplemental water supply for the nearby community of Farmersburg which has a perennial water problem.

Vermillion County

The bedrock formations in Vermillion County consist of sandstone, shale and coal strata. Of these formations, the sandstone is the only important source of ground water in the county and supplies from this source are only fair. The town of Dana, dependent upon drilled rock wells, has had to limit water usage on numerous occasions.

The main sources of ground water in Vermillion County are the beds, lenses, and pockets of sand and gravel in the glacial drift or the fluvioglacial deposits (deposits produced by streams which had their source in glacial ice) in and along the Wabash River valley.

Bedrock valleys now buried and hidden from view have been encountered in Vermillion County. The trunk stream of this ancient drainage system was the preglacial Wabash River. In general, the present Wabash River follows its ancestral course. There are, of course, exceptions. For example, at Perrysville the Wabash River flows over bedrock; the former channel lies about 1½ miles to the west of Perrysville and is filled with 180 feet or more of glacial drift and outwash materials. An abundance of ground water is usually found associated with these buried valleys.

Clinton, the largest city in Vermillion County, obtains its water supply from two gravel wells located on the west bank of Wabash River. The combined capacity of these wells has been estimated to be 4,500,000 gallons per day. Average consumption is about 320,000 gallons per day. The water is treated with chlorine. The hardness in parts per million of calcium carbonate is 520.

Newport, the county seat, obtains water from one 8-inch well, 40 feet deep, in glacial sand and gravel. This well was drilled in 1946. The average consumption has been estimated to be 25,000 gallons per day. The water is chlorinated.

The water supply for the Wabash Valley Ordnance Works near Newport is provided by six units (Ranney wells) located beside the Wabash River. The pump capacity is about 123,000,000 gallons per day. Average pumpage during the peak period of World War II was about 72,000,000 gallons per day.

Vigo County

Bedrock formations in Vigo County belong to the productive coal measures and consist primarily of sandstones, shales, and coals. The variable character of the sandstones, the considerable thickness of shale beds, and the minerals associated with the coals cause the bedrock formations in this area to be poor aquifers.

Illinoian glacial drift, which covers most of the county, contains much clay till which is not water bearing. As a result considerable difficulty has been experienced in a number of localities in securing adequate supplies of water from glacial drift even for domestic and livestock purposes. In a number of such cases surface supplies have been developed. Morainic Wisconsin glacial drift, better supplied with water, is present in a small area in northwestern Vigo.

The chief sources of ground water in Vigo County are the water-bearing sands and gravels associated with the deep fill in the Wabash River valley. Records of borings made at various points along the valley suggest that the present Wabash River in Vigo County approximates its former course and that the bottom of the former valley lies approximately 100 feet below the present bed of Wabash River. The coarse sands and gravels which fill this buried valley apparently contain practically unlimited supplies of ground water.

The broad valley of Honey Creek, about 4 miles south of Terre Haute, suggests the presence of a filled valley. It appears, however, that these are lake-type sediments and are not satisfactory for the development of large supplies of ground water.

The water supply system for Terre Haute is owned and operated by the Terre Haute Water Works Corporation, a subsidiary of the American Water Works and Electric Company. The supply is taken directly from the Wabash River. The estimated average daily pumpage is 5,700,000 gallons, with a probable maximum in excess of 8,000,000 gallons. As was stated previously, the Wabash River has a minimum flow far in excess of demands. The treatment employed consists of prechlorination, activated carbon, coagulation, sedimentation, rapid sand filtration, and postchlorination. The hardness in parts per million of calcium carbonate is reported to be 335. Hardness will vary with rainfall and river stage.

Data furnished by the Division of Sanitary Engineering of the State Board of Health reveal that some 20 to 25 of the principal industrial and commercial users of water in Terre Haute have their own water systems. Water is obtained from wells sunk into the alluvial gravels.

Seelyville, in eastern Vigo County, purchases water from Terre Haute. An 8-inch main extends along U. S. Highway 40 for 9 miles to connect the distribution systems of the two communities.

West Terre Haute obtains its water supply from 3 wells drilled into a gravel aquifer. The water is softened by zeolite pressure filtration and is chlorinated. The estimated average daily pumpage is 85,000 gallons.

The possibilities of the development of large supplies of ground water along the valley of the Wabash River are seen in the records of the wells of the Vigo Ordnance Plant located in Honey Creek Township near Terre Haute. Three 54-inch, gravel-packed wells, 80 feet deep, served the plant. The wells on test delivered 1,265 gallons per minute each. The static water level was about 21 feet and on maximum tests had a drawdown to 35 feet.

ABANDONED MINES AND STRIP-MINE LAKES

Large supplies of surface and subsurface waters associated with coal strip-pits and abandoned mine workings are present in this area. No systematic or detailed studies of the location and characteristics have been conducted but there is some general information on the subject. Waters associated with the Block coals and Coal IV are generally clear and sweet. Waters associated with Coal III (deeper than the Coal IV horizon) are almost always highly mineralized and high in acid content. Coal III is not extensively mined in the Brazil-Terre Haute region; therefore, there are few pits with these waters. Waters associated with Coal V in the Brazil-Terre Haute region are not highly mineralized; however, waters associated with Coal V become progressively more mineralized as one proceeds southward. Mineralization appears to be due to the chemicals in the rocks over the coal as well as in or adjacent to the coal vein.

Fragmentary data suggest that the recharge rate of bodies of water associated with coal formations is quite variable. Data on depth of water in individual strip-pits might be obtained by contacting the coal company concerned for data on depth to the coal at the last cut. In the abandoned strip-pits the coal seam and part of the associated strata are covered in some cases by slump material, silts, and muds.

A number of large, abandoned coal mines are present in and near Brazil. According to records collected by the Division of Geology, Indiana Department of Conservation, the mined-out area of the Brazil Block Mine No. 1, located in the western part of the city of Brazil, contains approximately 200 acres. These same records indicate the depth to the coal horizon to be 101 feet and the coal seam to be 3.5 feet thick. The coal is capped by a gray, sandy shale. The rate of recharge is not known. There are numerous other such mined-out areas in and around Brazil which are assumed to be filled with ground water that could be used for air-conditioning, cooling, fire protection and other industrial purposes if the quality of water is such that undue corrosion or steam pollution would not result. It is conceivable that these waters could also be used to supplement the public water supply.

Large abandoned mine workings in Coal VI are present near Sullivan. The old Sullivan Mine, which had a vein of coal approximately 7 feet thick at an estimated depth of 225 feet, was located near the northwest corner of Sullivan. Another large mine was located north of Coffman Cemetery near the northeast edge of Sullivan. Both of these abandoned workings are probably filled with water.

A few large lakes resulting from coal-stripping operations are present near Ashboro and Carbon in Clay County. They are associated with the Block coals of that region which are usually not very highly mineralized. The surface drainage area contributing to these lakes is usually small. However, the surface operations have been known to encounter former sub-surface operations which are flooded and contribute large quantities of water to the present open pits.

GENERAL CONCLUSIONS

The surface waters of the Wabash River and the ground waters associated with the deeply filled valleys of the major streams constitute an enormous water-supply potential. Otherwise the area embracing Clay, Parke, Sullivan, Vermillion and Vigo counties is not characterized by having an abundance of readily available ground water. Over much of the area the ground water supplies are only poor to fair since neither the bedrock formations nor the glacial drift contain good aquifers. Many of the streams are small and do not flow all year. A number of the smaller communities in this five-county area have experienced considerable difficulty in keeping pace with the demands for water. Undoubtedly other communities in this area would establish public water systems if water supplies were readily available and economical to develop and distribute. Also, there is insufficient water in many rural and suburban localities to meet the requirements of the modern plumbing systems which followed the installation of the rural electrification system into this area. Businesses and industries have also made increased demands for water for air-conditioning, cooling, processing, etc.

Cities such as Terre Haute, Clinton and Montezuma are located so that they can take advantage of surface waters from the Wabash River or of the water-bearing materials in the valley of that stream. Sullivan has gone to the Wabash valley to develop an adequate water supply. Clay City has located its wells in the valley of Eel River. Rockville has apparently developed an adequate supply near the Raccoon Creek. Brazil, on the other hand, is apparently consuming all the water its system is producing and will need additional supplies for municipal and industrial expansion.

Sugar and Raccoon creeks and Eel River carry goodly supplies of surface water which are as yet practically untouched. No larger communities are located on or near these streams. Surface waters associated with coal operations are being developed to some extent but have not been fully utilized. The ground-water possibilities along the former route of Raccoon Creek in southern Parke and northern Vigo counties have not been fully explored.

Certain of the deeply buried limestone formations carry quantities of mineralized waters. Although these waters may not be satisfactory for human or livestock consumption, they might be developed for air-conditioning, cooling, or fire protection. The potentialities of similar uses for water associated with strip-mine lakes and abandoned mine workings would seem favorable.

Chapter V

THE AGRICULTURE OF THE TERRE HAUTE AREA

Richard P. Taylor and
Dr. J. Edwin Losey[1]

AGRICULTURAL PROBLEMS AND POSSIBLE SOLUTIONS

Some of the agricultural problems of the Terre Haute Area are well known to local agricultural leaders and farmers. Others are not as well known, but are equally important. The Area is heterogeneous in farm characteristics, and the generalizations to be made here do not apply to all sections, but are relatively applicable to much of the Area. No doubt the problems revealed by this brief study are common to much of Indiana, and the recommendations may apply to many other areas.

Man-Land Adjustments

Strictly from the viewpoint of the most productive use of labor resources, it appears that there has long been and there still is a surplus of farm people. This is indicated by the high replacement rate for farm males and the high proportion of the labor force underutilized at several census periods. The very high proportion of operators working off their own farms suggests the probability of inefficiency in one job or another, but this is not certain. Probable underemployment on many farms is indicated by the large number with a small volume of business. Yet, it is possible that the continuing growth of part-time farming and of commuting from rural residences to city jobs may develop into an efficient and productive arrangement, particularly if more nonagricultural jobs are provided in the Area. A satisfying way of life to the persons concerned might thus be attained. Otherwise, out-migration ought to receive further encouragement.

Adjustments in Land Use

Two major problems in land use confront the Area: 1) the large acreage devoted to crops that are, in the long run, inadvisable on such land; and 2) the constant piling up of "stripped" acreage resulting from the coal-mining operations.

One of the most striking trends discovered is the recent increase in soybean acreage and the decrease in hayland. In view of high prices for grain crops in recent years overcropping has been almost inevitable. The percentage of land cropped needs to be reduced in many parts of the Area if the soil is to be conserved. Much land which is subject to erosion should be used for hay and grass—especially legumes. Soil conservation methods would save much cropland. Additional acres are now pastured which experience shows should be in woodland not subject to pasturing. More generally, long-range land use planning by the local people, with help from specialists, should be encouraged.

Strip-mining and farming are competing for use of the land in several localities. However, the strip-mining versus farming controversy seems to be largely beside the point. From the standpoint of land use, the problem in connection with mining is the adequate utilization of the "stripped" territory. With approximately 18 thousand acres of land already surfaced-mined and several thousands of additional acres a future certainty, the stripped land presents an ever-present challenge in land utilization. All possible alternatives for providing economic and social utilization of this land need careful study.

Soil Improvement

There is considerable acreage with poor productivity due to erosion and other conditions. Many acres of pasture land could be improved by proper soil management, and much of the best river-bottom land is deficient in organic and chemical elements. Heavier fertilization is indicated. A thorough and constant soil-improvement program on individual farms would greatly benefit the agricultural operations.

Inadequate Livestock Enterprise

Historically, the amount of livestock in the Area has not been sufficient to utilize the feed produced. Part of this has been due to physical conditions such as the lowlands along the Wabash, and perhaps also to a cultural background less developed in the direction of animal husbandry than was the case with some ethnic groups. The downward trend in livestock numbers in recent years is notable. If the aforementioned adjustments in cropping systems were made there would be a further demand for roughage-consuming livestock. Regardless of the cropping system, there seems to be a place for more livestock in the farm enterprise, except perhaps in the "cash grain" parts of the Area.

---

[1] Dr. Losey of the Department of Agricultural Economics, Purdue University, supervised the work of Mr. Taylor, a graduate student, and developed the final draft. The authors wish to express their thanks to agricultural leaders in the Terre Haute Area and to their colleagues and others who helped in one way or another.

Farm Organization and Management

There are many indications in the Terre Haute Area that considerable reorganization in its agricultural operations would greatly benefit both agriculture and the general economy. The constant trend toward a larger volume of business on the larger full-time farms is an indication of the adjustments going on. Available data indicate that there are still many of the smaller, inefficient full-time farms. A pertinent question is such cases, of course, is the competency to manage larger farms.

The great prevalence of small subsistence and part-time farms indicates that more research should be devoted to their opportunities and needs. The operators of such "farms" can profitably produce a larger share of the goods they consume than can the commercial farmers in the Area. Conditions on these farms, especially in the sections wherein they are concentrated, favor more emphasis on garden products, small fruits, and such enterprises. Little has been done to date in general agricultural programs for such "farmers."

Floods

Every year thousands of acres of farm land in the Area are flooded. Some of the trouble is directly traceable to the run-off from local farm land that should have a more suitable cover. However, much of the flood water is from upstream sources along the Wabash and is not within the powers of the local citizens to control. The entire flood problem here cannot be solved within the Area itself; it involves effective flood control throughout the Wabash Basin.

Marketing Problems

A large portion of the agricultural product is marketed outside the Area. This may be economically sound, but raises the pertinent question as to the possibility of further local investments in food and chemical processing plants, developing better markets for local produce, etc. A local agricultural committee might well investigate the situation, especially the prevalent feeling that the poultry outlets are inadequate.

Interdependence of the Communities in the Terre Haute Area

The Terre Haute Area is composed of widely diverse interests and occupations. There seems to have been (and may still be) a stronger than usual tendency for suspicion and rivalry between certain communities and groups. This, in the opinion of outstanding local leaders, has had an adverse effect upon the economy of the Area. One of the most vital activities within the territory may be programs to bring about a better understanding between all groups—especially a clearer understanding of the interrelationship and interdependence that exist between all communities.

LAND AND HUMAN RESOURCES

Climate, topography, soils and man-land combinations are fundamental factors in the agricultural economy of any locality. Most adjustments and techniques employed in the agricultural industry are basically designed to produce a relationship of these factors suitable to the aims of a prosperous and expanding agricultural economy.

The realization of the relationships of these factors one to the other and in combination is an essential feature of any resources study. Consequently, in this section of the broader study emphasis will be placed upon the casual relationships of these factors as they apply to the agricultural situation in the Area. No attempt will be made to elaborate upon each of the individual factors, but upon the problems and apparent maladjustments within and between the factors as they affect the agricultural economy. The major emphasis of this report will be on a description of the agricultural industry, its present and future capabilities. The physical elements of temperature, rainfall, topography and soils and the social characteristics of the people of the Area will be rapidly covered as a preliminary introduction to the major discussion.

PHYSICAL CHARACTERISTICS

Temperature and rainfall.[2] The climate is temperate; it is generally mild and adaptable to a variety of farm enterprises. On the average, the first killing frost arrives in October and the last during the latter part of April, thus delineating a growing season of between 170 and 180 days. The mean annual temperature is approximately 55 degrees with extremes recorded of 110 degrees in summer to 18 below in winter. Humidity varies from season to season but is relatively high at all times. Precipitation of around 40 inches annually is ample and usually distributed adequately with a major portion falling during the growing season.

---

[2] Condensed from *Climate and Man*, 1941 Yearbook of Agriculture.

***Topography and drainage*.** The terrain of the Area varies from flat river-bottom lands to rough, rolling uplands. A considerable portion of the better farm land lies along the banks of the Wabash or its tributaries. Some are broad valleys, others quite narrow. Back from these valleys are undulating terraces that rise into rolling uplands, which often level off to gently rolling "flats." Approximately 13 percent of the total land area is woodland, mostly in the rougher uplands. Outlying fringes, particularly parts of Edgar County, Illinois and Vermillion County, Indiana are undulating prairie, but in general the entire area is characterized by its valleys and rolling uplands.

The natural drainage is principally west for the Indiana section and east for the Illinois sector into the Wabash River. Due to the run-off in the rougher parts, and to the fact that the Wabash is the recipient of upstream water, flood conditions are prevalent during the rainy seasons and damage to the bottom land is a problem in agricultural operations. In the "low ground" areas of the level lands artificial drainage is necessary. Tile drainage is usually satisfactory, although in some instances open ditches are utilized.

***Soil resources*.**[3] The soils of the Area are of a great variety. They are traceable to three major sources: water-laid, ice-laid and wind-borne. The water-laid materials are largely alluvial silts, sands and terrace gravels. The ice-laid material is relatively unassorted calcareous till. Wind-borne or loess soils are silts and fine sands of both high and low organic content.

Light-colored surface soils, medium-textured and moderately permeable subsoils, predominate in the sloping to rough upland areas. The tillable portions of these uplands are of medium productivity under good management, but lower in productivity under average farming conditions. Due to their semi-permeability and texture, erosion and the maintenance of fertility are major problems in agricultural operations.

Back from the rolling lands along the Wabash in the Indiana section is a more level belt with light-grayish soils intermingled with better, dark-colored depressional soils.

Darker-colored surface soils with medium-textured, moderately permeable subsoils predominate in the level or undulating prairie sections of Edgar County, Illinois and Vermillion County, Indiana. The productivity of these soils is high, and drainage and the maintenance of good physical condition are the major soil management problems.

The first and second bottoms along the Wabash River are largely composed of moderately dark-colored, variable-textured, highly productive soils. However, the second bottoms include considerable areas with sandy loam and fine sands. Because of their coarser texture, greater permeability and lower water-holding capacity such areas are less productive. In general, overflow and drainage after overflow are the principal problems of soil management associated with the bottom lands.

Light-colored surface soils with heavier subsoil predominate on the level or gently sloping areas. Where this light-gray surface soil is underlaid with calcereous till, shale and coal are found at deeper depths. Along the eastern border of the Indiana section of the Area, particularly Clay County and adjoining parts of Parke, Sullivan and Vigo counties, these conditions prevail. Here coal mining has relegated farming to second place in the economy.

Actual nomenclature and description of soils vary between the states of Illinois and Indiana and data are incomplete as to the proportionate distribution of the major soil types of the Area. However, the predominate acreage is that of the lighter-colored, less permeable upland soils (Figure A-1). On the basis of topography rolling land is most extensive, closely followed by level "flats." River bottom lands are less extensive.

SOCIAL CHARACTERISTICS

***Population*.** The total population of the Area continued to increase after settlement until 1920 when it reached a peak of 254,723 people (Table A-1). Since 1920 the population decreased each decade and by 1940 had declined approximately 8 percent under the peak. Preliminary 1950 figures indicate a further decrease, particularly in four of the Indiana counties.

Trends in the total population are important, but for this segment of the total study the rural population is of most significance. The rural population (that is, the population outside of incorporated areas of 2,500 or more people) reached its peak a decade before the total population and recorded a high in 1910. By 1940 the rural population had declined approximately 14 percent from the peak period. Strictly farm population data has not been available for as long a period, but between 1930 and 1940 this segment of the population decreased 9 percent. This trend has, no doubt, continued.

Significant internal changes within the population are also revealed. In 1880 the rural population comprised roughly 80 percent of the total but by 1950 it had dwindled to 55 percent. Indiana is only about 40-50 percent rural.

---

[3] Abstracted from *The Story of Indiana Soils*, Special Bulletin, Purdue University Agricultural Experiment Station, and *Principal Soil Association Areas of Illinois*, Mimeograph AG1397, Department of Agronomy, Agricultural Experiment Station, University of Illinois.

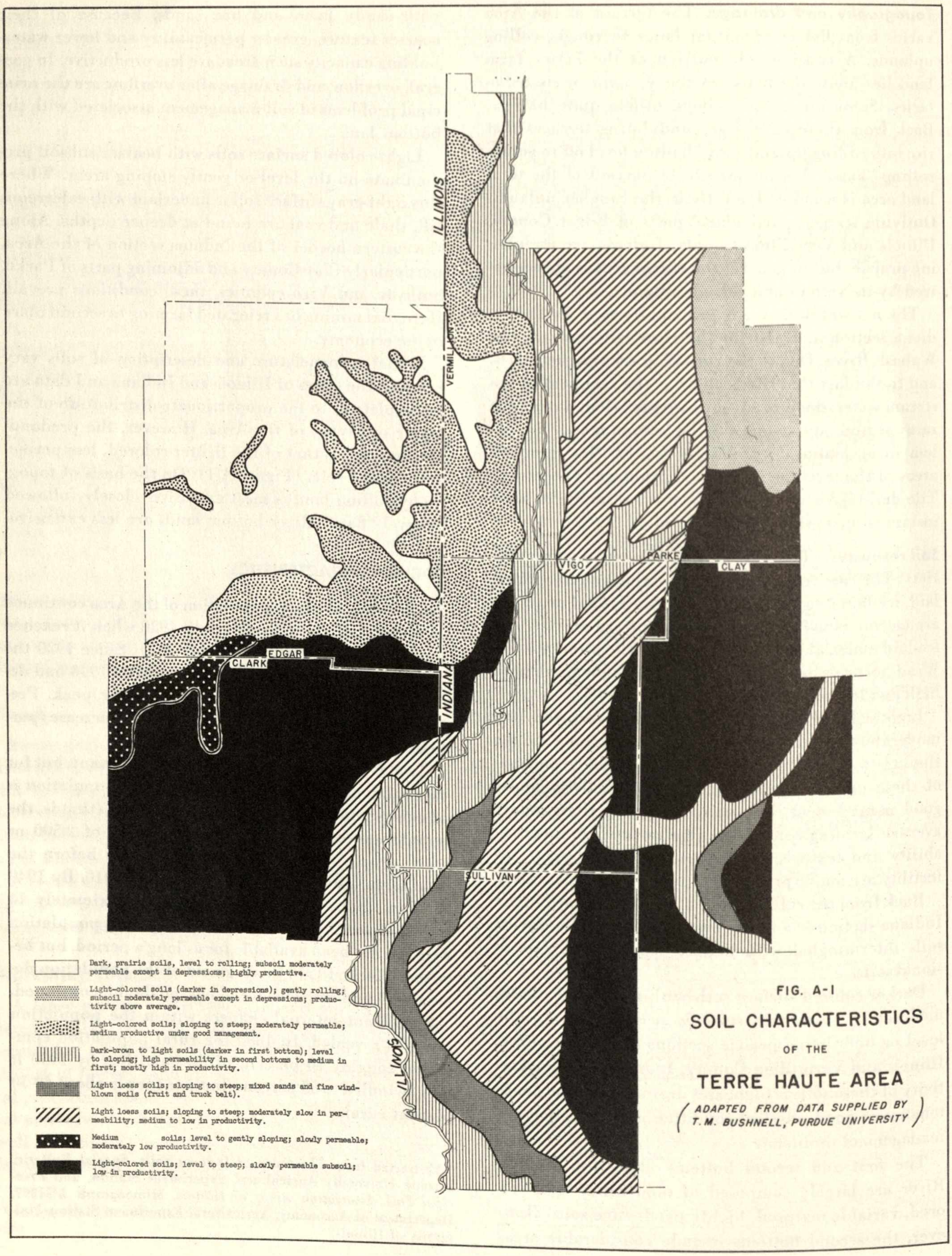

ILLINOIS
VERMILION
INDIANA
EDGAR
CLARK
VIGO
PARKE
CLAY
SULLIVAN
ILLINOIS
Dark, prairie soils, level to rolling; subsoil moderately permeable except in depressions; highly productive.
Light-colored soils (darker in depressions); gently rolling; subsoil moderately permeable except in depressions; productivity above average.
Light-colored soils; sloping to steep; moderately permeable; medium productive under good management.
Dark-brown to light soils (darker in first bottom); level to sloping; high permeability in second bottoms to medium in first; mostly high in productivity.
Light loess soils; sloping to steep; mixed sands and fine windblown soils (fruit and truck belt).
Light loess soils; sloping to steep; moderately slow in permeability; medium to low in productivity.
Medium soils; level to gently sloping; slowly permeable; moderately low productivity.
Light-colored soils; level to steep; slowly permeable subsoil; low in productivity.

FIG. A-1

SOIL CHARACTERISTICS OF THE TERRE HAUTE AREA

(ADAPTED FROM DATA SUPPLIED BY T. M. BUSHNELL, PURDUE UNIVERSITY)

Table A-1.—Population Changes in the Terre Haute Area: 1880 to 1940

YEAR	TOTAL POPULATION	PERCENTAGE DISTRIBUTION Urban[1]	PERCENTAGE DISTRIBUTION Rural
1880	170,726	19.8	80.2
1900	212,883	27.9	72.1
1920	254,723	40.5	59.5
1930	236,110	41.2	58.8
1940	234,505	43.2	56.8
1950[2]	228,419	45.2	54.8

[1] Urban means incorporated places with 2,500 or more people.
[2] Preliminary.
Source: Decennial censuses.

Within the rural population itself a marked change in internal composition was taking place. The rural-farm population and the incorporated-village population decreased while the unincorporated-village (hamlet) and open-country population was increasing (Table A-2). Evidently there were more nonfarm people living in country residences and in crossroads settlements.

Density of the total rural population is often used as an indicator of man-land adjustments. Since the land are has remained practically constant and the total rural population has declined, the density of the Area is naturally less than at the peak of the population. However, the counties have had varying experiences. Edgar County, with a density of 34 persons per square mile in 1900 and 24 persons in 1940, has been the most sparsely settled county. The most densely settled county shifted from Clay in 1900 to Vigo in 1940. Two major currents seem to be responsible for these shifts: the increase in the size of farms due to mechanization and the decrease of the mining activity in Clay County along with the growth of the urban and rural-nonfarm populations in Vigo County.

Table A-2.—Changes in the Composition of the Rural Population, Terre Haute Area: 1930 and 1940

RESIDENCE	1940 NUMBER	1940 PERCENT	1930 NUMBER	1930 PERCENT
Farm	59,651	44.8	63,070	45.4
Village	26,845	20.2	30,497	21.9
Other nonfarm	46,683	35.0	45,378	32.1
Total	133,179	100.0	138,945	100.0

Source: Adapted from Fifteenth and Sixteenth Censuses, *Population*, Vol. II.

The densities in rural areas in 1940 were as follows:

Area, total	43.2
Clay	47.4
Parke	38.5
Sullivan	48.0
Vermillion	55.9
Vigo	80.2
Clark	26.8
Edgar	24.1
Indiana	42.8

However, the density figures above reflect the mining and other nonfarm populations living in rural parts of these counties. Relating the land in farms in 1945 to what was called the farm population in the 1945 Census of Agriculture (all persons living on farms except persons in dwelling units rented to other than farm operators), one gets a more restricted index which may be a better indication of relative pressures among the farm people, rather than all so-called "rural" people. The figures were as follows:

Area, total	17.5
Clay	21.5
Park	16.3
Sullivan	19.5
Vermillion	17.0
Vigo	23.7
Clark	15.0
Edgar	13.7
Indiana	20.7

From this point of view, only two of the counties had a higher ratio than the state. The lowest ratio, 13.7 persons per square mile in Edgar County, indicates the low ratios typical of the best land areas in the Middle West.

Labor force. Utilization of the available labor supply is indicative of the economic activity in an area. Man-land relationships are especially emphasized by the proportion of the labor force employed in agriculture. The total force in the Terre Haute Area in 1940 was approximately 90,000 persons, with a major portion of

Table A-3.—Residential Distribution of the Labor Force, Terre Haute Area, Illinois and Indiana: 1940

AREA	TOTAL FORCE	PERCENTAGE DISTRIBUTION URBAN	PERCENTAGE DISTRIBUTION RURAL-NONFARM	PERCENTAGE DISTRIBUTION RURAL-FARM
Terre Haute Area	88,889	46.6	29.1	24.3
Illinois	3,360,823	77.6	10.6	11.8
Indiana	1,331,378	59.3	21.7	19.0

Source: Sixteenth Census, *Population*, Vol. II.

the force residing in rural territory (Table A-3). It is noted again that the Area is much more "rural" than Indiana and (especially) Illinois.

However, only three-fourths of the labor force in the Area was employed in gainful occupations (Table A-4). This was a lower percentage than for either of the parent states. Interestingly, the lowest percentage employed was among the rural-nonfarm people. Some urban and rural-nonfarm persons were employed in agriculture; however, of more interest is the fact that only 65.2 percent of the farm labor force was employed in agriculture.

Even for the folks living on farms, then, there was not complete employment in agriculture. The proportion of the agriculturally-employed living in the rural nonfarm areas varied considerably and was least in the more urbanized vicinity of Terre Haute (Table A-5). This is a strong indication of the growing trend for folks living on farms to work elsewhere and the tendency for few village and city residents to look to agriculture for employment.

One indication of the surplus of farm workers in the Area is revealed by a glance at the replacement rates for rural-farm males.[4] Every county in the Area has a replacement rate in excess of that required to maintain the current number of male farm operators and workers. (Table A-6). Barring out-migration, there would have been a 31 percent increase in the number of men 25 years of age or over on the farms during the decade 1940-50. However, the Area rate is smaller than Indiana's and Illinois', and far below that for the U. S.

---

[4] Number of males in the farm population reaching 25 years of age for every 100 rural-farm males, aged 25-69 years, dying or reaching 70 years of age. These results would occur if migration were halted during the time period specified.

Table A-6.—Replacement Rates for Rural-Farm Males in the Terre Haute Area, Illinois and Indiana: 1940-50 Period

LOCALITY	REPLACEMENT RATE[1]
Area, average	131
Clay	124
Parke	123
Sullivan	132
Vermillion	144
Vigo	123
Clark	143
Edgar	131
Illinois	147
Indiana	135
United States	167

[1] See footnote 4.

Source: Conrad Taeuber, *Replacement Rates for Rural-Farm Males Aged 25-69 Years, by Counties, 1940-50*, United States Department of Agriculture, 1944.

Table A-4.—The Proportion of the Labor Force Employed, and the Proportion of the Labor Force Employed in Agriculture, by Residence, Terre Haute Area: 1940

EMPLOYMENT STATUS	TOTAL	URBAN	RURAL	
			NONFARM	FARM
Employed	74.8	77.1	63.3	84.2
Employed in agriculture	20.8	6.3	7.1	65.2

Source: Sixteenth Census, 1940, *Population*, Vol. II.

Table A-5.—Total Employment and Employment on Farms of the Male Labor Force, by Residence, Terre Haute Area and Parent States: 1940

LOCALITY	PERCENT OF LABOR FORCE EMPLOYED		PERCENT OF LABOR FORCE EMPLOYED ON FARMS	
	RURAL-FARM	RURAL-NONFARM	RURAL-FARM	RURAL-NONFARM
Area total	84.2	63.3	65.2	7.1
Clay	83.4	66.2	59.6	5.7
Parke	86.6	71.3	72.1	8.0
Sullivan	72.8	49.3	61.2	7.2
Vermillion	80.4	51.1	75.2	7.1
Vigo	80.8	65.2	50.4	4.3
Clark	90.5	80.3	77.6	7.7
Edgar	92.4	80.1	63.8	16.3
Illinois	91.9	79.4	78.5	5.2
Indiana	92.1	82.0	70.5	5.7

Source: See Table A-4.

Table A-7.—Rural Level of Living Indexes,[1] Terre Haute Area, Illinois, and Indiana: 1940

LOCALITY	RURAL-FARM	RURAL-NONFARM	COMPOSITE
Area, counties:			
Clay	108	89	98
Parke	116	100	108
Sullivan	102	85	93
Vermillion	112	88	95
Vigo	110	102	104
Clark	108	101	106
Edgar	132	104	122
Illinois	122	108	116
Indiana	117	111	115

[1] Statistically computed on the basis of the prevalence of five items representative of living standards. The indexes for farm and nonfarm people are based on different items, and not exactly comparable.

Source: Margaret Jarman Hagood, *Rural Level of Living Indexes for Counties of the United States, 1940*, United States Department of Agriculture, 1943.

With a current supply of too many potential operators and farm hands for an efficient agriculture, heavy out-migration of farm youth must continue unless an increase in labor input is economically feasible on existing farms or additional nonagricultural opportunities are made available in the communities. Along with the other indicators discussed, it gives evidence of the necessity for continuing out-migration to insure appropriate man-land adjustments in the Area—at least if more jobs cannot be created locally.

Level of living. Levels of living, the possession of certain material items, tend to be closely related to the money incomes of families. Consequently, in rural areas dependent upon the natural resources for livelihood there is a high relationship between the nature of such resources and the levels of living. Maladjustments in man-resources relationships are frequently indicated by the levels of living of folks in such areas.

One of the most widely used measurements of levels of living is the U. S. Department of Agriculture's "level of living index." Average for the Nation is considered to be 100. Indexes based on the 1940 census vary from a high of 122 (composite) in Edgar County to a low of 93 in Sullivan County (Table A-7). These figures are obviously correlated with quality of land.

Both Illinois and Indiana were below Edgar, the highest individual county in the Area, but the other counties scored below the average of the parent states.

It is of interest to note that in 1940 the farm folks of the Area ranked above the national average for farm people, whereas the local nonfarm residents ranked below the average for such residents. Evidently living conditions were poorer, relative to comparative national groups, among nonfarm residents of the villages and open country than among farm families.

BASIC TRENDS IN AGRICULTURE

Trends in Land Use and Farm Organization

Land use. Since 1900 there has been a gradual decrease in the amount of land devoted to farming and seemingly a downward trend in the amount actually cultivated (Table A-8). This is not unusual—in such areas some land unsuited to farming is reverting to forest, some is being strip-mined, some added to cities, etc.

The two major exceptions to the general trend were in 1935 and 1945. Both these years were during critical periods in the agricultural industry. The earlier one came during the depression years when low agricultural prices brought more and more land under cultivation in order to produce enough volume to make a livelihood; the second was during the war period when demands for increased production brought all possible land under cultivation regardless of the hazards to poor land.

Table A-8.—Trends in the Utilization of Land, Terre Haute Area: 1900 to 1945

YEAR	LAND IN FARMS		FARM LAND CULTIVATED	
	Acres	% of Total Land Area	Acres	% of Farm Land
1900	1,808,284	91.6	[1]	[1]
1920	1,726,770	87.5	[1]	[1]
1925	1,631,545	82.7	1,019,397	62.5
1930	1,582,557	80.2	977,394	61.8
1935	1,722,745	87.3	1,029,610	59.8
1940	1,583,386	80.2	911,142	57.5
1945	1,682,115	85.3	1,129,776	67.2

[1] Data not comparable in 1900 and 1920.

Source: Census reports.

Table A-9.—Changes in Number and Average Size of Farms, Terre Haute Area: 1880 to 1945

YEAR	NUMBER OF FARMS	AVERAGE SIZE OF FARMS
1880	16,073	113
1900	18,721	97
1920	16,515	102
1930	14,562	109
1935	17,168	100
1940	14,401	112
1945	13,465	125

Source: Census of Agriculture reports.

Number and size of farms. The total number of farms reached a peak in 1900 and has declined each census period since (Table A-9). Such decreases are consistent with the amount of land available and the size of farm deemed necessary for economical operations.

The decrease in number of farms has been accompanied by some significant shifts in acreage per farm that are important in studying the agriculture of the area. The average acreage per farm has increased, according to Table A-9. However, the most spectacular changes (as seen in Table A-10) have been in the extremes of farm-size groups.

Small farms have always been a part of the agricultural economy, as have large ones. However, since 1880 the number of farms under 10 acres in size has become a much higher proportion of the total, increasing from only 2.5 percent in the earlier year to 10.5 percent in 1945. Similarly the larger farms (over 260 acres) have advanced since 1900 from less than five percent of the total to approximately 13 percent of the total. Thus the number of farms in the "in between" size groups has declined—especially the 50-99 group (the "eighties").

One of the striking features of the size distribution of farms in the Area is the large proportion in the size groups that are normally associated with "part-time" farming—farms less than 50 acres in size. Since 1880, one-third or more of the farms have been of less than 50 acres, with an increase in practically every census period. Although the number of farms under 10 acres has increased and forms a larger proportion of the total, there has been comparatively little change in the total acreage included in small farms. On the other hand, between 1920 and 1945 the proportion of all land in large farms practically doubled. While the larger farms consisted of only 13 percent of the total number of farms in 1945, they encompassed over 40 percent of the land farmed.

Tenancy. The proportion of farms operated by tenants in the Area has been erratic, about an average percentage for Indiana but lower than that for Illinois (Table A-11). With the exception of Edgar County, the Area has always had a high degree of owner-operatorship. This is consistent with a high proportion of small farms and modest land fertility.

Table A-11.—Percentage of Farms Operated by Tenants, Illinois, Indiana, and the Terre Haute Area, Census Years: 1880 to 1945

YEAR	ILLINOIS	INDIANA	TERRE HAUTE AREA
1880	31.4	26.2	35.2
1900	39.3	28.0	31.7
1920	42.7	32.0	30.5
1925	42.0	29.2	26.3
1930	43.1	30.1	27.9
1935	44.5	31.6	30.8
1940	43.1	28.3	29.5
1945	39.1	22.7	23.1

Source: Census reports.

Trends in Crop and Livestock Production

Crop acreages and yields. Field crops—especially corn, wheat, oats, soybeans and hay—utilize a major portion of the cropland in the Area. Corn is the most important, although in recent years soybeans grown for grain have rapidly increased in popularity. (See Table A-12.) In earlier years the small grains, wheat and oats, were very widely grown. Wheat is still an important crop, but oats acreage has suffered at the ex-

Table A-10.—Percentage of Farms in Various Size Groups (Acres), Terre Haute Area: 1880 to 1945

YEAR	UNDER 10	10-49	50-99	100-259	260 AND OVER
1880	2.5	30.3	28.1	[1]	[1]
1900	4.3	31.0	29.0	30.8	4.9
1920	6.0	25.6	27.0	35.6	5.8
1930	7.4	26.0	24.0	35.0	7.6
1935	10.7	28.7	22.9	30.5	7.2
1940	10.8	27.4	20.6	31.8	9.4
1945	10.5	27.0	17.8	31.8	12.9

[1] Not available for 1880.

Source: Calculated from United States Census of Agriculture reports.

Table A-12.—The Average Annual Acreage of Field Crops in the Terre Haute Area, by Specified Five-Year Periods

TIME	CORN	WHEAT	OATS	SOYBEANS[1]	HAY
1930-34	382,420	134,370	151,520	14,980	126,800
1940-44	366,260	93,940	73,080	174,260	132,480
1945-49	392,400	125,960	71,440	270,220	98,420

[1] Not grown extensively as a grain crop until the late 1930's.
Source: Calculated from the Annual Crop Summaries, Illinois and Indiana.

pense of soybeans, declining from an annual acreage of 151,520 in the early 1930's to less than half that by the late 1940's. Much hayland has been plowed for soybeans in recent years.

Yields of the major crops in the Terre Haute Area have increased somewhat irregularly. Weather conditions often offset any gains made by improved varieties and production technology. Census data are very inadequate to indicate yields, and other sources are not readily accessible. Data for the Indiana portion of the Area, however, offer some evidence of trends in crop yields (Table A-13). Improvements have been quite irregular, generally greatest in Parke and Vermillion counties.

Table A-13.—The Increase in Yield Per Acre of Specified Crops, Indiana Counties of Terre Haute Area and Indiana, 1940-49 over 1922-31

AREA	CORN (bu.)	WHEAT (bu.)	OATS (bu.)	HAY (tons)
Five-county area. . .	13.8	3.8	4.6	.1
Clay	14.2	2.9	2.0	.2
Parke	19.2	4.5	4.4	.1
Sullivan	9.8	2.7	.9	.2
Vermillion	15.3	6.3	8.1	.2
Vigo	10.3	3.6	3.1	.1
Indiana	13.8	3.1	6.3	.2

Source: Based on original data from various Annual Crop Summaries published by the Department of Agricultural Statistics, Purdue University.

Livestock numbers. The agriculture of the Area has been largely centered about the production of livestock, principally cattle and hogs. The industry experienced a period of rapid development in livestock numbers during the two war periods, but numbers have fluctuated considerably after the termination of each. However, hog numbers have shown on upward trend since the middle 1920's (Figure A-2). Cattle numbers have been less irregular, but have declined in recent years. Horses, mules, and sheep, once prominent, have declined materially. Poultry numbers, always flexible, have declined in recent years.

PRESENT-DAY AGRICULTURE

LAND USE

Utilization of the land for specific purposes is shown in Table A-14 and Figure A-3. Land used for crops varied from a high of 79 percent of the total farm land in Edgar County to a low of 60 percent in Clay County.

Although over 13 percent of the farm land is in woodland, a very high proportion of this is utilized for pasture. Parke and Vermillion counties in particular make use of woodland pasture. Edgar, with its productive

Table A-14.—Land in Farms and Percentage Distribution of Farm Land, by Use, Terre Haute Area: 1944

USE	CLAY	PARKE	SULLIVAN	VERMILLION	VIGO	CLARK	EDGAR	AREA, TOTAL
Land in farms (thous. of acres)	195	243	238	125	199	301	381	1,682
Percent distribution:								
All uses	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cropland	59.7	63.4	69.7	66.8	68.9	65.6	78.5	67.2
Harvested	49.2	47.3	51.2	59.8	52.2	52.3	73.4	56.5
Failure	1.7	.4	1.2	.8	1.5	.3	.1	.6
Idle	4.5	1.8	7.9	3.5	6.6	4.4	.3	3.8
Pasture only	5.4	3.9	9.6	2.7	8.6	8.6	4.2	6.3
Woodland	14.9	27.7	10.6	17.6	12.8	13.8	4.3	13.5
Pastured	10.3	22.5	6.6	14.9	10.0	8.4	3.4	9.9
Unpastured	4.6	5.2	4.0	2.7	2.8	5.5	.9	3.6
Other pasture	16.5	11.3	12.6	9.6	9.6	13.8	13.8	12.8
All other land	9.0	7.6	6.9	6.0	8.7	6.7	3.4	6.5

Source: United States Census of Agriculture, 1945.

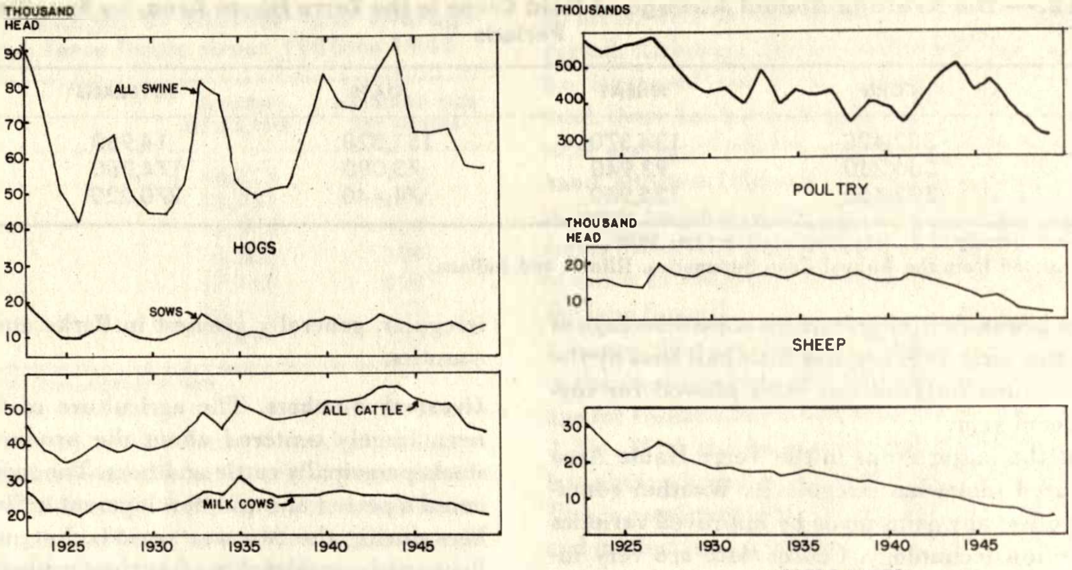


FIG. A-2

ESTIMATED NUMBER OF LIVESTOCK IN THE FIVE INDIANA COUNTIES OF THE AREA, 1923-1949

SOURCE: DEPARTMENT OF AGRICULTURAL STATISTICS, PURDUE UNIVERSITY.

prairie lands, has the smallest portion of woodland, but evidently has been utilizing most of it for pasture.

One feature of the Area is that most of it is underlaid with shale and coal. By 1947 almost 18 thousand acres of land in the Area had been mined by the open-cut method, and operations have continued on hundreds of additional acres. In fact, approximately two-fifths (41.0 percent) of the total land stripped for coal in Indiana by 1947 with within the boundaries of the Terre Haute Area.[5] The three Area counties in which these operations have continued to be of consequence are Clay, Sullivan and Vigo. Among these, the proportion of all land in the county that has been strip-mined varies from about 3½ percent in Clay to 1½ percent in Vigo.

Farm Characteristics

Number and size of farms. The number of farms in the Area in 1945 was 13,465, and the average acreage was approximately 125 acres (Table A-15). Large farms were most numerous in Edgar and the small farms most prevalent in Vigo County. Size groups are relative and there actually are few extremely "large" farms. Only two percent of all farms in the seven counties were over 500 acres in size.

Types of farms. The farms have varied types of agricultural enterprises with no one type dominating the picture. Illinois and Indiana use different terminology in delineating "type of farming" areas and consequently the Terre Haute Area lies in several different such designations. However, the "Cash Grain" designation of

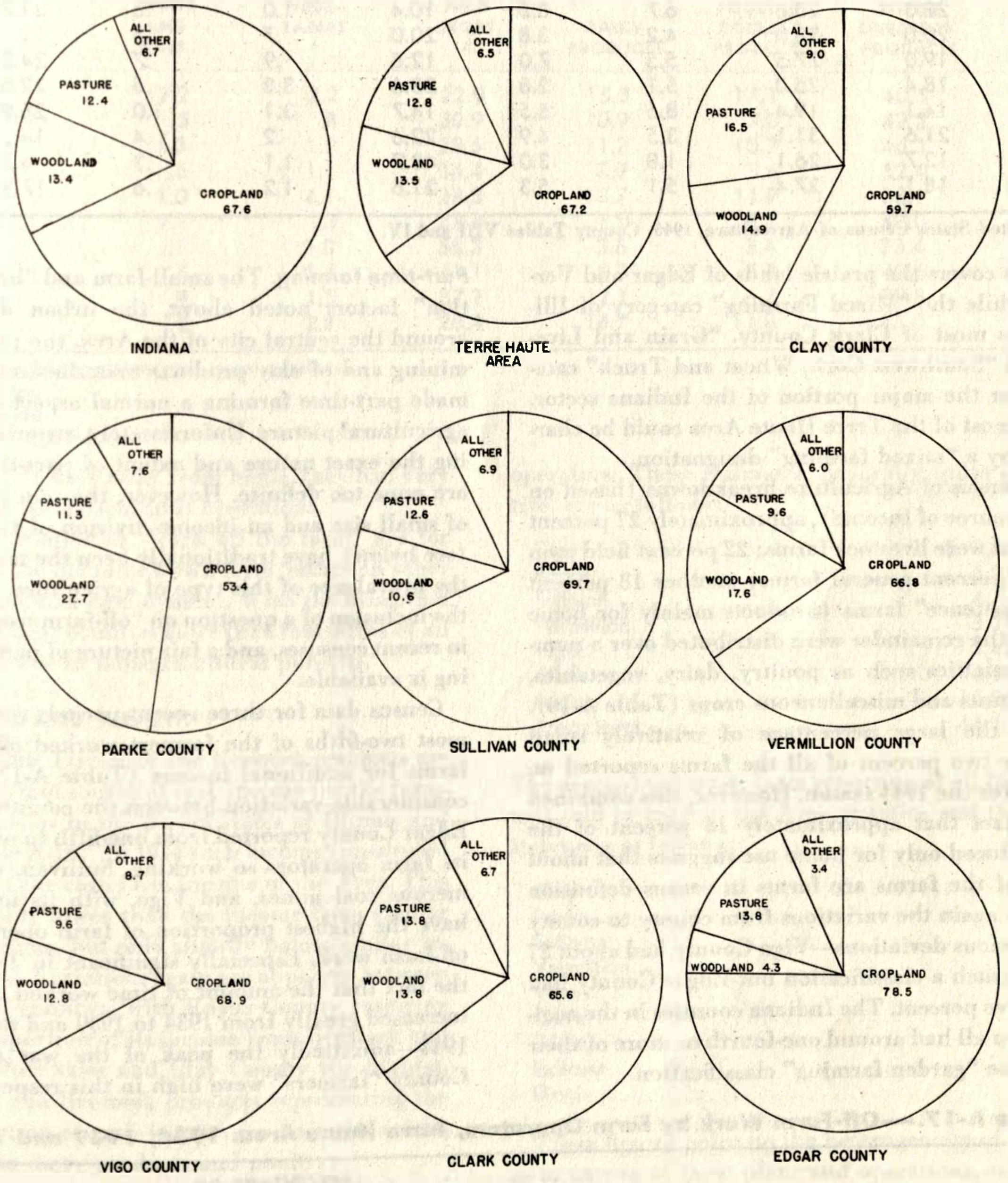
---

[5] G. A. Lindstrom, "Extent, Character, and Forestation Possibilities of Land Stripped for Coal in the Central States," Central States Forest Experiment Station, Technical Bulletin No. 109, December 1948.

Table A-15.—Number, Average Size and Distribution of Farms by Size Groups, Terre Haute Area: 1945

AREA	NUMBER OF FARMS	AVERAGE SIZE (acres)	PERCENT IN SIZE GROUPS (acres)					
			UNDER 10	10-49	50-99	100-259	260-499	500 & OVER
Clay	2,100	93.0	11.4	33.2	19.1	30.0	5.9	.4
Parke	1,734	140.0	9.6	20.4	19.1	36.4	11.8	2.8
Sullivan	2,208	107.9	11.1	31.4	21.7	26.2	7.6	1.9
Vermillion	876	142.9	11.4	27.2	14.8	29.0	13.6	3.9
Vigo	2,277	87.4	17.5	37.0	17.0	21.2	5.6	1.7
Clark	2,149	139.9	5.5	21.3	19.4	39.1	12.8	1.9
Edgar	2,121	179.5	7.0	16.4	11.9	40.9	19.8	4.0
Area, total	13,465	124.9	10.5	27.0	17.8	31.8	10.7	2.2

Source: United States Census of Agriculture, 1945.



INDIANA

TERRE HAUTE AREA

CLAY COUNTY

PARKE COUNTY

SULLIVAN COUNTY

VERMILLION COUNTY

VIGO COUNTY

CLARK COUNTY

EDGAR COUNTY

FIG. A-3

FARM LAND UTILIZATION, AREA COUNTIES AND STATE OF INDIANA : 1944

Table A-16.—Percentage of Farms by Specified Types, Terre Haute Area: 1945

AREA	GENERAL	LIVE-STOCK	DAIRY	POULTRY	FIELD CROPS	VEGE-TABLE	FRUITS AND NUTS	PRODUC-ING FOR OWN USE	NOTHING SOLD OR USED
Clay	22.0	25.6	6.7	8.5	10.4	1.0	.6	21.7	2.9
Parke	20.0	38.0	4.2	3.8	20.0	.7	.5	11.5	.8
Sullivan	19.0	27.5	5.5	7.0	12.8	.9	.7	24.2	1.5
Vermillion	18.4	25.0	5.1	2.8	23.6	3.2	.5	22.0	1.0
Vigo	14.1	19.4	8.6	5.5	14.7	3.1	1.0	26.9	5.4
Clark	21.6	31.1	3.5	4.9	22.6	.2	.4	14.2	.7
Edgar	12.7	26.1	1.8	3.0	48.7	1.1	.3	4.7	1.4
Area, total	18.1	27.4	5.1	5.3	21.6	1.2	.6	17.8	2.1

Source: United States Census of Agriculture, 1945, County Tables VIII and IV.

both states covers the prairie lands of Edgar and Vermillion, while the "Mixed Farming" category of Illinois covers most of Clark County. "Grain and Livestock" and "Southwest Corn, Wheat and Truck" categories cover the major portion of the Indiana sector. Actually, most of the Terre Haute Area could be characterized by a "mixed farming" designation.

Using Census of Agriculture breakdowns (based on principal source of income), approximately 27 percent of the farms were livestock farms; 22 percent field crop farms; 18 percent general farms; another 18 percent were "subsistence" farms (products mainly for home use); and the remainder were distributed over a number of specialties such as poultry, dairy, vegetables, fruits and nuts and miscellaneous crops (Table A-16).

Despite the large percentage of relatively small farms only two percent of all the farms reported no cash sales for the 1944 season. However, this combined with the fact that approximately 18 percent of the farms produced only for home use suggests that about one-fifth of the farms are farms in census definition only. Here again the variations from county to county follow previous deviations—Vigo County had about 27 percent in such a classification but Edgar County had less than five percent. The Indiana counties in the coal-mining area all had around one-fourth or more of their farms in the "garden farming" classification.

Part-time farming. The small-farm and "home production" factors noted above, the urban development around the central city of the Area, the prevalence of mining and of clay products manufacture, have long made part-time farming a normal aspect of the local agricultural picture. Unfortunately, criteria for analyzing the exact nature and extent of part-time farming are none too definite. However, the number of farms of small size and an income division of farm receipts (see below) have traditionally been the major clues to the prevalence of this type of agriculture. Add to this the inclusion of a question on "off-farm work," as done in recent censuses, and a fair picture of part-time farming is available.

Census data for three recent periods reveal that almost two-fifths of the farmers worked off their own farms for additional income (Table A-17). There is considerable variation between the counties, but even Edgar County reported from one-fifth to one-fourth of its farm operators so working. Sullivan, with its numerous coal mines, and Vigo, with its urbanization, have the highest proportion of farm operators doing off-farm work. Especially significant in Table A-17 is the fact that the amount of time worked off the farm increased greatly from 1934 to 1939 and then again to 1944—admittedly the peak of the war effort. Vigo County "farmers" were high in this respect; working

Table A-17.—Off-Farm Work by Farm Operators, Terre Haute Area: 1934, 1939 and 1944

AREA	PERCENTAGE OF OPERATORS REPORTING			AVERAGE DAYS WORKED		
	1944	1939	1934	1944	1939	1934
Clay	39.9	40.2	45.1	201	181	109
Parke	32.3	35.8	35.7	178	138	117
Sullivan	48.9	45.1	49.5	199	169	120
Vermillion	30.4	32.8	27.2	198	171	117
Vigo	46.5	46.9	46.5	241	201	137
Clark	31.0	31.8	26.7	148	104	97
Edgar	19.8	25.3	20.1	153	121	138
Area, total	36.3	37.8	37.3	195	155	120

Source: Calculated from Census of Agriculture reports.

Table A-18.—Percentage Distribution of Cash Farm Income, by Source, Terre Haute Area and Parent States: 1944

COUNTY	CROPS			LIVESTOCK AND LIVESTOCK PRODUCTS			
	FRUITS AND NUTS	VEGETABLES [1]	FIELD CROPS [2]	DAIRY PRODUCTS	POULTRY, POULTRY PRODUCTS	OTHER LIVESTOCK PRODUCTS	FOREST PRODUCTS
Clay	2.2	2.2	22.0	15.3	17.1	40.5	.5
Parke	.5	.8	30.9	10.9	7.0	49.2	.4
Sullivan	1.3	1.9	28.5	11.2	10.3	46.3	.1
Vermillion	.5	1.1	34.4	7.9	3.6	52.4	.2
Vigo	1.0	4.1	28.3	13.7	11.9	38.1	.1
Clark	1.1	.3	38.8	7.9	8.6	43.0	.1
Edgar	.1	1.0	58.3	3.8	3.4	33.4	[3]
Area, total	.7	1.4	41.1	8.3	7.3	40.6	.1
Illinois	.9	1.5	37.1	12.1	6.7	39.8	[3]
Indiana	.9	2.8	20.4	16.7	11.8	46.0	.2

[1] Does not include irish potatoes and sweet potatoes.
[2] Including potatoes.
[3] Less than .1 percent.
Source: Census of Agriculture, 1945.

an average of 241 days away from home, they had very little time left for agricultural operations.

These data relative to "work off the farm" are for work done off the operator's own farm, either on other farms or at nonfarm employment. With the exception of Clark and Edgar counties more than four-fifths of all off-farm work was in nonagricultural pursuits.

FARM INCOME AND WEALTH

Source of income. Livestock and livestock products are the most important source of cash income for the farmers in the Area, as in the parent states of Illinois and Indiana (Table A-18). In 1944 such income constituted 56.2 percent of the cash farm income of the Area. This was considerably lower than the income from similar sources in Indiana, but only slightly below similar income in Illinois. Variations again are apparent between the individual counties, with Edgar County receiving the *lowest* proportion of its income from livestock and livestock product sales and Clay County the highest. The livestock and livestock products representing the largest proportion of cash income are hogs and cattle, as compared to dairy products and poultry.

Field crops (principally corn, soybeans and wheat) were the source of a considerable portion of cash income, especially in Vermillion, Clark and Edgar counties. Edgar and Vermillion are both located in the "Cash Grain" farming areas of their respective states.

Forest products were almost insignificant as a source of cash income to farmers, although all counties reported some cash sales.

Total and average income. The 1945 Census of Agriculture reports the value of farm products (1944) sold and used in the household, as estimated by the farm operators. These estimates, generally quite conservative, are as follows:

Clay	$ 3,846,444
Parke	5,914,558
Sullivan	4,714,424
Vermillion	3,299,694
Vigo	4,483,008
Clark	6,510,720
Edgar	15,805,658
Area, total	44,574,506

The average value per farm reporting of all farm products sold or used in the Area counties and the parent states was as follows:

Clay	$1,892
Parke	3,449
Sullivan	2,182
Vermillion	3,824
Vigo	2,094
Clark	3,075
Edgar	7,563
Indiana	3,112
Illinois	5,039

These figures point up the heterogeneity of the Area as to nature of farm plant and operations, which was emphasized in previous sections. Vermillion and Parke counties have many substantial commercial farms, and parts of these two counties have the farm characteristics and income typical of the better farm areas of Indiana. Edgar County is more typical of the commercial farm area of central Illinois, and Clark shades into the poorer agricultural area to the south.

Most of the farms reported some products used in the household. The value of such produce ranged from around $300 in Clark and Edgar counties downward to about $200 in Vigo County.

Table A-19.—Percentage Distribution of Farms Classified by Total Value of Farms Products, Counties in Area and Indiana: 1944

VALUE CLASSES ($)	CLAY	PARKE	SULLIVAN	VERMILLION	VIGO	CLARK	EDGAR	INDIANA
All classes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 to 249	18.0	7.3	17.1	18.9	22.0	7.2	4.6	10.1
250 to 599	20.6	14.4	23.5	14.6	22.8	11.5	5.4	14.2
600 to 999	13.5	11.5	12.7	8.1	12.6	11.8	5.8	10.8
1,000 to 1,499	10.6	10.1	10.1	8.3	8.8	12.3	6.4	9.9
1,500 to 2,499	12.4	13.2	11.2	12.1	10.8	16.0	9.6	14.7
2,500 to 3,999	12.3	13.9	10.1	12.4	9.7	14.7	9.7	15.2
4,000 to 5,999	7.5	12.2	6.3	9.3	7.1	12.2	13.2	11.8
6,000 to 9,999	3.4	11.5	5.5	9.8	3.7	9.5	19.0	8.8
10,000 and over	1.6	5.8	3.4	6.5	2.5	4.8	26.4	4.6

Source: Adapted from U. S. Census of Agriculture, 1945, County Table VIII.

Variations in farm income in the Area and Indiana are shown in Table A-19. This shows clearly the large proportion of part-time farms in Clay, Sullivan, Vermillion and Vigo counties. Vermillion is unique in having many of these farms and also many commercial farms of goodly size—the small places are mostly in the southern, coal-mining portion. Parke and Clark counties have a similar percentage distribution, and Edgar is clearly in a class by itself—evidently taking on the characteristics of "industrial" farming.

Farm property. The agricultural industry in the Area represents a considerable investment for the owners and operators of the farms. Land and buildings were conservatively valued at 146 million dollars in 1945. The farmers reported more than 13 million dollars worth of farm machinery and implements. Average values per farm varied greatly in both real estate and machinery. In real estate per farm, the difference was greatest between Edgar County, with the highest average ($28,685) and Vermillion, second in rank ($11,573). Clay, with an average reported value of $5,510, was lowest, and the Area average was about $10,800. Comparative figures for Indiana and Illinois were approximately $10,200 and $17,900, respectively.

In value of machinery and equipment, averages per farm ranged downward from $2,361 in Edgar to $970 in Sullivan County. Again, the Area average was slightly above the Indiana average—$1,364 as compared with $1,328. The 1945 estimate for Illinois was $1,839.

Unlike real estate and operating equipment, the investment in livestock on farms varies considerably over short periods of time—the animal population is sensitive to economic changes. Based on census data as of January 1, 1945, the farmers of the Area had on hand livestock valued at approximately 16 million dollars (Table A-20).

Thus, the agricultural industry in the Area in 1945 had approximately 175 million dollars in land, buildings, equipment and livestock resources.

Farm Production

Crop production and yields. Corn is the most important crop grown in the Area, both in acreage allotted to it

Table A-20.—Value of Specified Classes of Livestock on Farms, Terre Haute Area, 1945 (in thousands of dollars)

COUNTY	ALL SPECIFIED LIVESTOCK	MULES AND HORSES	CATTLE AND CALVES	HOGS AND PIGS	GOATS AND KIDS	SHEEP AND LAMBS	CHICKENS
Clay	1,832	158	1,038	429	[1]	23	183
Parke	2,591	134	1,353	892	1	65	146
Sullivan	2,102	195	1,148	529	1	45	184
Vermillion	1,216	71	734	298	[1]	52	61
Vigo	1,881	145	1,183	398	1	18	136
Clark	2,594	194	1,379	729	1	40	251
Edgar	3,738	199	2,011	1,269	[1]	45	214
Area, total	15,955	1,096	8,846	4,546	4	288	1,175

[1] Less than $500.

Source: Census of Agriculture, 1945.

Table A-21.—Total Acreage and Average Acreage Per Farm Reporting of Specified Grain Crops, Area and Parent States: 1944

AREA	CORN		SOYBEANS		WHEAT		OATS	
	Acres	Ave. per farm	Acres	Ave. per farm	Acres	Ave. per farm	Acres	Ave. per farm
Clay	39,230	29	27,709	24	12,809	21	1,492	11
Parke	49,831	38	25,668	26	11,828	22	8,892	16
Sullivan	55,833	37	27,299	27	17,117	35	1,342	16
Vermillion	31,898	50	21,516	43	6,377	30	5,641	22
Vigo	46,399	34	30,742	29	10,559	25	2,663	14
Clark	71,034	44	48,534	36	8,889	24	7,756	17
Edgar	116,147	69	102,510	69	12,783	28	27,451	29
Area, total	410,372	43	283,978	38	80,362	26	55,237	21
Illinois[1]	9,140	54	3,833	37	1,205	30	3,011	11
Indiana[1]	4,554	34	1,780	23	1,253	20	1,096	17

[1] "Acres" columns are in thousands of acres.

Source: Census of Agriculture, 1945.

and the income derived (Table A-21). Corn is considered to be a surplus crop in this part of the country—that is, grain is shipped out. There is wide variation from county to county in the average acreage devoted to the major crops. In noting these differences in Table A-21, it should be recalled that the averages are for farms on which some of the crop was raised. The Area statistics for corn and soybeans are heavily weighted by Edgar County.

A graphic view of the importance of various crops in the Area is provided by Figure A-4. Here it can readily be seen that corn accounts for more than one-third of the cropland and soybeans about one-fourth. Thus over 60 percent of the cropland was in soil-depleting, cultivated crops—seemingly too high in view of the character of the soil and topography of most of the Area. The proportion of cropland used for these two crops was much greater than in Indiana, and was below Illinois only in corn.

The proportion of cropland devoted to corn was rather stable from county to county, but the soybean acreage varied considerably, with Sullivan County ranking low and Edgar County high. In fact, the data indicate strong competition in Edgar County between corn and soybeans.

Small grains, principally wheat and oats, accounted for proportions of land use much below that of the parent states. Wheat especially has long been an important cash crop in the Area, but in recent years it has lost ground. Oats, secondary to wheat among the small grains, are not well adapted to the climate. Hay, while a common crop in the Area, ranked below the small grains in acreage. The smaller amount of land used for hay crops here as compared with the parent states reflects the lesser importance of cattle production in the Area.

Thus, corn, soybeans, small grains and hay accounted for approximately 80 percent of the cropland in the Area. Minor acreages used for vegetables, fruits and miscellaneous crops were reported in scattered localities. The Area produces some horticultural specialties, but in the total picture these seem of minor importance. Tomatoes, sweet corn, peas and a variety of canning crops are important sources of income to a few local farmers, but not of enough importance to overshadow the "corn complex" of the Area.

Average yields for specified major crops are shown in Table A-22. The figures for the five Indiana counties are somewhat smaller in each case than the Indiana averages, but not strikingly so. Surprisingly, Parke

Table A-22.—Average Per Acre Yields of Major Crops, Five Area Counties and Indiana: 1940 to 1949

COUNTY	CORN (bushels)	SOYBEANS (bushels)	WHEAT (bushels)	OATS (bushels)	TAME HAY (tons)
Clay	45.9	18.1	16.9	24.4	1.3
Parke	53.3	19.3	21.3	30.7	1.4
Sullivan	42.9	16.3	16.8	28.7	1.3
Vermillion	46.4	20.5	21.9	35.7	1.4
Vigo	40.8	16.6	18.3	29.4	1.3
Five counties, average	46.0	18.1	18.7	30.9	1.3
Indiana	48.6	19.1	20.7	36.4	1.4

Source: Adapted from Annual Crop Summaries, Department of Agricultural Statistics, Purdue University.

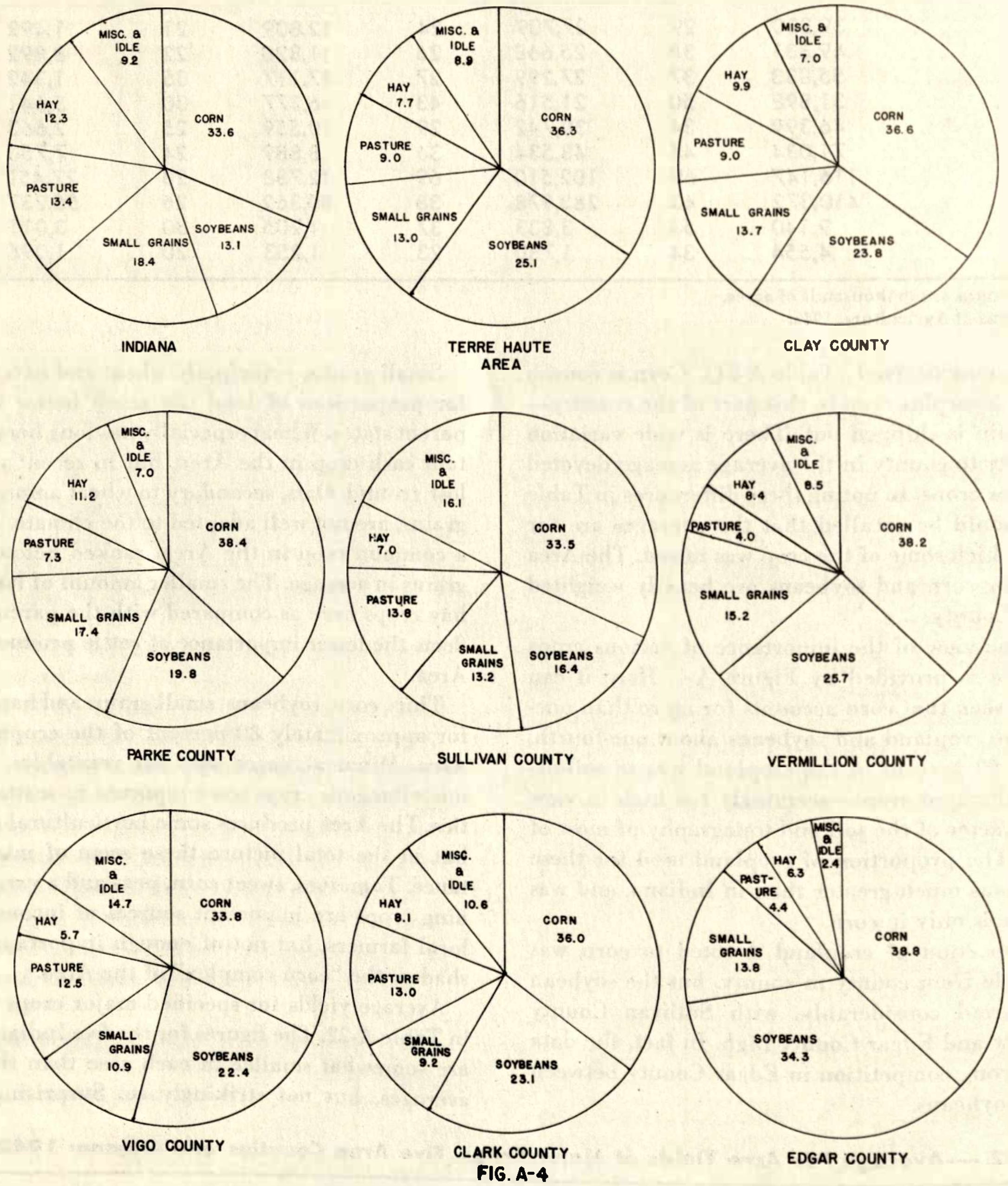


FIG. A-4

PROPORTION OF CROPLAND IN SPECIFIED CROPS, AREA COUNTIES AND STATE OF INDIANA : 1944

County farmers have produced the most corn per acre —maybe they crop less poor land. Vermillion County farmers have some superiority in the other crops. Factors besides land quality determine these averages, but there is no doubt that the lower yields in the three more southerly counties are partly explained by the generally lower quality of land.

Livestock production. Livestock, as previously stated, holds an important place in Area agriculture. Feed and pasture crops are grown on a majority of the farms and a large part of the grain and roughage is consumed on the farms where produced or on other farms in the same locality. Reflecting physical and cultural factors, there are local differences in the emphasis given each class of livestock in the farm management practices. For example, Parke County, through a well-organized farm program (including its outstanding County Fair), appears to have been unusually successful in emphasizing high-quality cattle.

Culturally, the Area is a part of the Corn Belt. With corn the most important crop, it would be expected that hog production would be emphasized. (See Figure A-2.) In effect, the high comparative value of corn per unit input encourages the corn-hog combination. However, a larger percentage of all farms reported one or more head of cattle than reported having hogs. Evidently small farms are more likely to have a milk cow than a few pigs. Over one-half of all farms reported hog production as the major type of livestock enterprise.

Cattle are considered second in importance in the Area, although cattle feeding is very important in some localities. Over one-third of the cattle reported were classified as milk cows. Approximately four-fifths of all the farms had some cattle or calves. This is rather striking considering the high percentage of small farms.

Sheep and lambs are relatively unimportant except for small sections where feeder lambs are shipped in to "feed out." There are scattered flocks throughout the Area. Horses and mules are decreasing in numbers, but the ratio of these animals to tractors was still more than 2 to 1 in 1945.

Chickens are found on a high percentage of farms, but mostly in small, farm flocks. There are a few highly commercialized poultry farms in the Area, but chickens are mainly an enterprise for home consumption of eggs and meat and a supplementary source of cash income. There seems to be little concerted effort to develop this industry—one which seems, on the surface, to be a logical industry for an Area becoming more urbanized.

The large areas of land unadaptable for cropping would indicate some justification for increasing the roughage-consuming livestock, but facts fail to show an inclination on the part of local farmers to do so. In general, the livestock enterprises have been developed upon an extensive rather than intensive scale. The lack of specialized markets for quality products, the preponderance of small units, the limited amount of high-quality land and the traditional corn-hog economy all tend to keep certain types of livestock at a low level for the average producer. The corn-hog combination has been the major source of agricultural income, and probably will continue to be for a predominant number of those farming.

MARKETS AND MARKETING[6]

The discussion of markets and marketing included here must be of a very general nature for two reasons. First, the survey method used did not obtain detailed, quantitative data. Second, the great variety of products produced and the different types of farming practiced make a complete discussion impractical for this study.

Hogs, which are probably the most important direct source of income to Area farmers, are marketed primarily in Indianapolis and Terre Haute. Indianapolis gets the bulk of the hogs, but appreciable numbers are marketed at the three packing plants in Terre Haute, especially from farms in and near Vigo County. Some of the hogs are sold through local buyers for eastern packers. There are also some small, local packing plants throughout the Area which take a few hogs.

By far the largest proportion of the cattle which are fed are marketed in Indianapolis. Some of them, especially from the north end of the Area, go to Chicago. A few are marketed in Terre Haute and locally. Cattle rank high as a source of income in some counties. In Vermillion County they rank a close second to hogs as a source of income. More cattle are fed in Edgar County than in any county on the east side of Illinois.

The Terre Haute milkshed has been described as including Vigo County, the south one-half of Parke County, the west one-half of Clay County, the north one-half of Sullivan County, the northeast one-half of Clark County, and the southeast corner of Edgar County.[7] Most of the milk produced is marketed as fluid milk through the Vigo Milk Producers Cooperative, which has control over milk marketed in Terre Haute. Practically all the milk used in Terre Haute is produced in the local milkshed, even during the short-milk season. Local markets provide outlets for both fluid milk and cream in every county in the Area. Besides the Terre Haute and other local markets, milk goes to Crawfordsville, Indianapolis, Lafayette and Vincennes, Indiana, and to Danville and Robinson, Illinois.

---

[6] Most of the information in this section was supplied by interviews with the agricultural agents in each county.

[7] Robert M. Carlisle, "Analysis of Structure, Practices, and Service of Fluid Milk Bargaining Cooperatives Serving Indiana," unpublished study, Purdue University.

Surprisingly, the Terre Haute Area is a deficit one as far as poultry is concerned. It is asserted that only about one-third of the quantity consumed is produced locally. There are rather large numbers of eggs produced, but the hatchery market claims large proportions of them every year. An estimated 50 percent of the eggs in Vermillion County are produced for hatcheries. There are three large hatcheries in Clay County alone. Besides supplying hatchery eggs to local hatcheries, some of which are known over several states, Area egg producers ship eggs to hatcheries in Michigan and some of the southern states.

Cull hens make up the bulk of the live poultry which is produced in the Area. Live poultry has been shipped into Terre Haute from as far away as Georgia.

Enough corn from the Area is marketed as cash grain to make it a corn surplus area. The cash grain is produced mostly in the river bottom and prairie sections. It is first marketed through the local elevators. Much corn is processed in the Area, especially in the chemical plants and distilleries at Terre Haute, but large quantities eventually go to eastern markets and to Chicago. Wheat follows much the same route as corn.

A large proportion of the soybeans produced in Clark, Edgar and Vermillion counties are trucked directly to soybean processing plants in Decatur, Illinois. Most of the beans produced in the rest of the Area are sold through local elevators, much the same as corn and wheat. A few soybeans are trucked to a processing plant at Henderson, Kentucky. As can be seen in Figure A-5, beans raised in the Area are shipped considerable distances to processing plants. Several firms are known to have considered locating a processing plant at Terre Haute, but none has reported plans to do so to date.

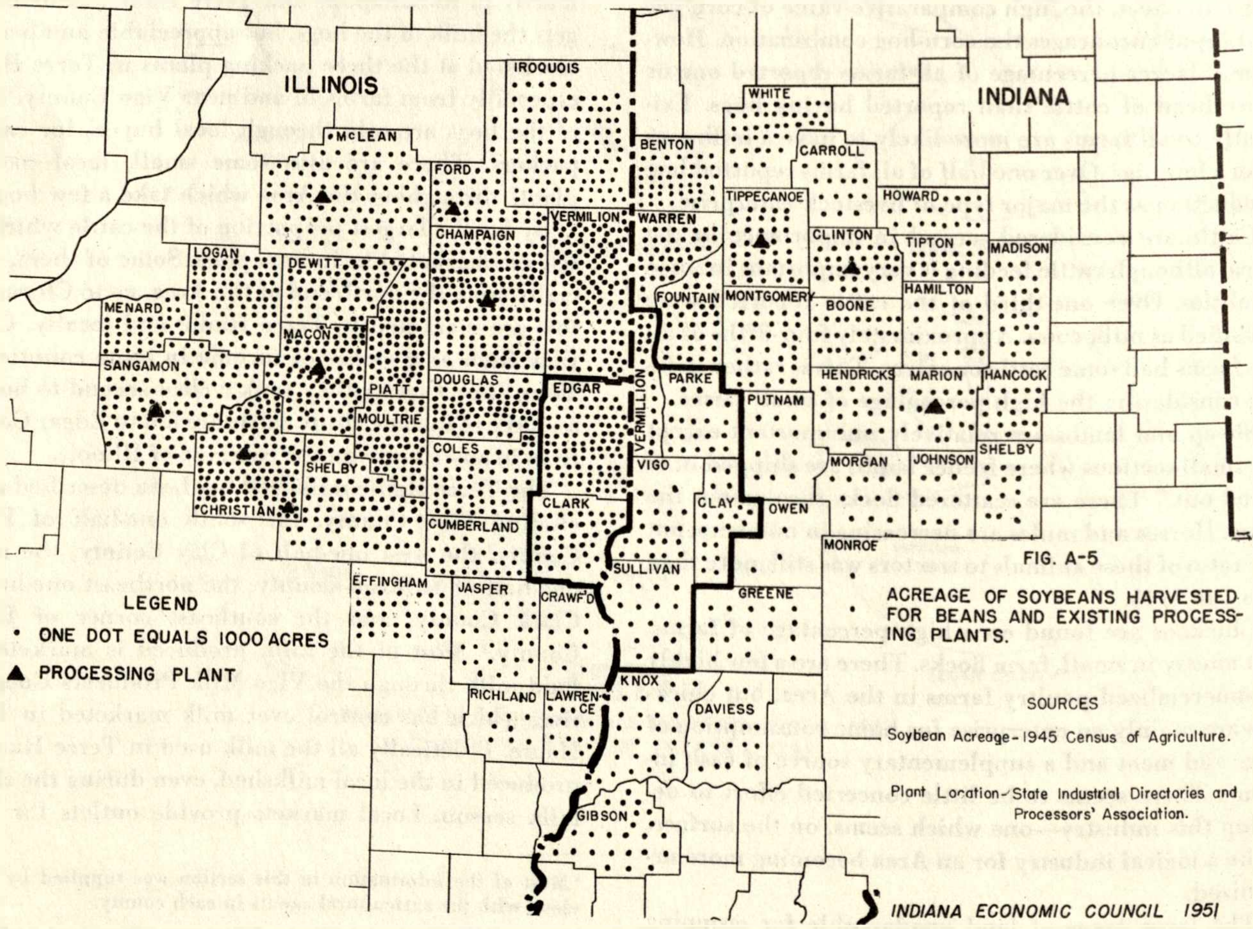


FIG. A-5

ACREAGE OF SOYBEANS HARVESTED FOR BEANS AND EXISTING PROCESSING PLANTS.

SOURCES

Soybean Acreage-1945 Census of Agriculture.

Plant Location-State Industrial Directories and Processors' Association.

INDIANA ECONOMIC COUNCIL 1951